FLYING MODEL ROCKET CATALOG

SR-71 Blackbird #1942
See Page 44

ESTES®
A DAMON COMPANY

No. 851 P/CR

Open For FREE Rocket Offer

Welcome to the exciting hobby of model rocketry!

Model rocketry is fun. In this catalog are dozens of great Estes rockets for your pleasure. To let you blast-off in a hurry, select one of the great starter sets.

Begin your model rocketry adventure with a Skill Level 1 kit. A fine choice of sport models which are perfect for beginners are in this catalog.

Build the rocket you select following the directions in the kit. Construct your own launch system. Bring along a friend (and his launch system if you do not have one!). Go out to the launch range, and select the ideal place for your launch pad. Put the model rocket engine in your rocket. Prep' your rocket, and place it on the launch pad. Give the Countdown, and Blast-off!

Retrieve your rocket. Prep' it again for another great launch.!

Like spaceships? Choose your favorite from the great selection of futuristic models.

For your convenience, our kits are listed by Skill Level. Skill Level 1 is the easiest. This makes it easy for your to select your next kit.

Power your rocket with precision Estes model rocket engines. Select the powerful engines for your missions from the selection on page 61.

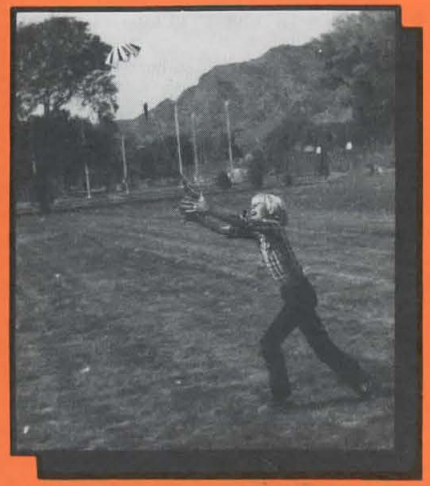
Want to share the fun of model rocketry? Start a school program! Your teacher can write, on school stationery, requesting an Estes Educator Packet #1452. Your teacher must include a $2 check for postage and handling. This packet contains a teacher's guide on why and how to use model rocketry in the classroom and a sample Alpha flying model rocket kit. Many teachers include model rocketry as a part of their programs each year, and many sponsor model rocket clubs at school.

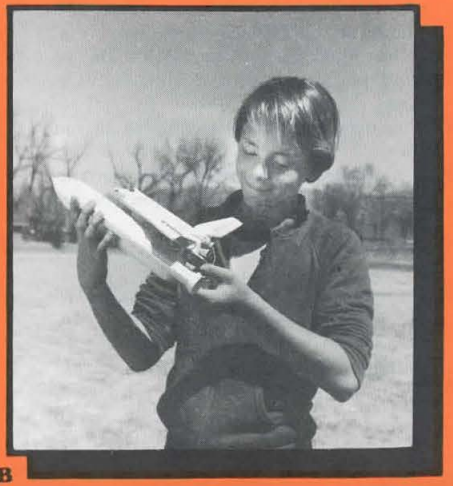
Want to take part in organized model rocket contests and/or a model rocketry achievement program? Join the National Association of Rocketry! See pages F and G of this catalog wrapper for details.

Want a FREE model rocket? Page D of this catalog wrapper has details on how you can receive a free rocket with each order. Send in your order NOW to receive your first free rocket.

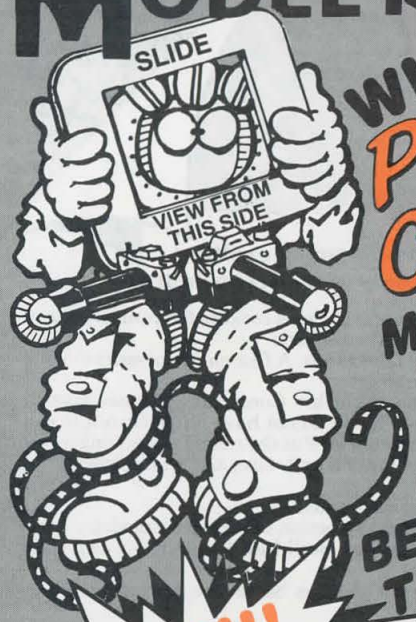
As your model rocketry skills progress, Estes is there to help you. The Technical Tips found throughout the catalog help you get started. Model Rocket News Magazine is sent periodically to active customers. Each issue contains interesting articles, special offers, helpful tips, and exciting contests for you.

See you at the launch pad!





MODEL ROCKETRY



WIN! PHOTO CONTEST

MORE THAN $600.00 WORTH OF ESTES MERCHANDISE CERTIFICATES WILL BE AWARDED. EACH OF THE TOP 25 PHOTOS WILL WIN A $25.00 ESTES MERCHANDISE CERTIFICATE.

WIN!! $25.00 IN **FREE** ESTES MERCHANDISE

HAVE FUN... AND WIN A PRIZE!

CONTEST RULES

1. All photos must deal with some aspect of model rocketry. Astro Cam 110 photos are OK. Please send only prints, either black and white or color. Do not send negatives, movie film, or VCR tape.
2. You may enter as many times as you like.
3. Employees of Estes Industries or members of their immediate families are not eligible.
4. All entries become the property of Estes.
5. Pack entries carefully - use cardboard for added protection. Note: Estes cannot accept responsibility for lost or damaged photos.
6. List camera settings, type of film used, and type of camera for photos taken with adjustable cameras. (Not required.)
7. Entries will be judged for visual impact, composition, and originality of model rocketry subject matter.
8. Deadline for receipt of entries is August 31, 1985.
9. A $25.00 merchandise certificate will be awarded to the 25 best entries. Decisions of the judges are final.
10. Winners will be announced in a future issue of Model Rocket News Magazine.
11. Be sure to include your name, age, address, city, state, and zip code with each entry. Please include your Skill Level if you are an EAC member.
12. Mail entries to:

Estes Industries
"Photo Contest"
Penrose, CO 81240

GOOD LUCK!

FREE ROCKET

Choose **one** of these great rocket kits **FREE!**

STREAK #7625 $2.95 Value

Send in your order for merchandise totaling **$7.50** or more and receive a **FREE** Streak.

COURIER #7626 $3.95 Value

COURIER

Send in your order for merchandise totaling **$12.50** or more and receive a **FREE** Courier kit.

DELTA WEDGE #7627 $4.95 Value

Send in your order for merchandise totaling **$20.00** or more and receive a **FREE** Delta Wedge kit.

TITAN II #7628 $7.49 Value

Send in your order for merchandise totaling **$30.00** or more and receive a **FREE** Titan II kit.

MEAN MACHINE #7629 $13.95 Value

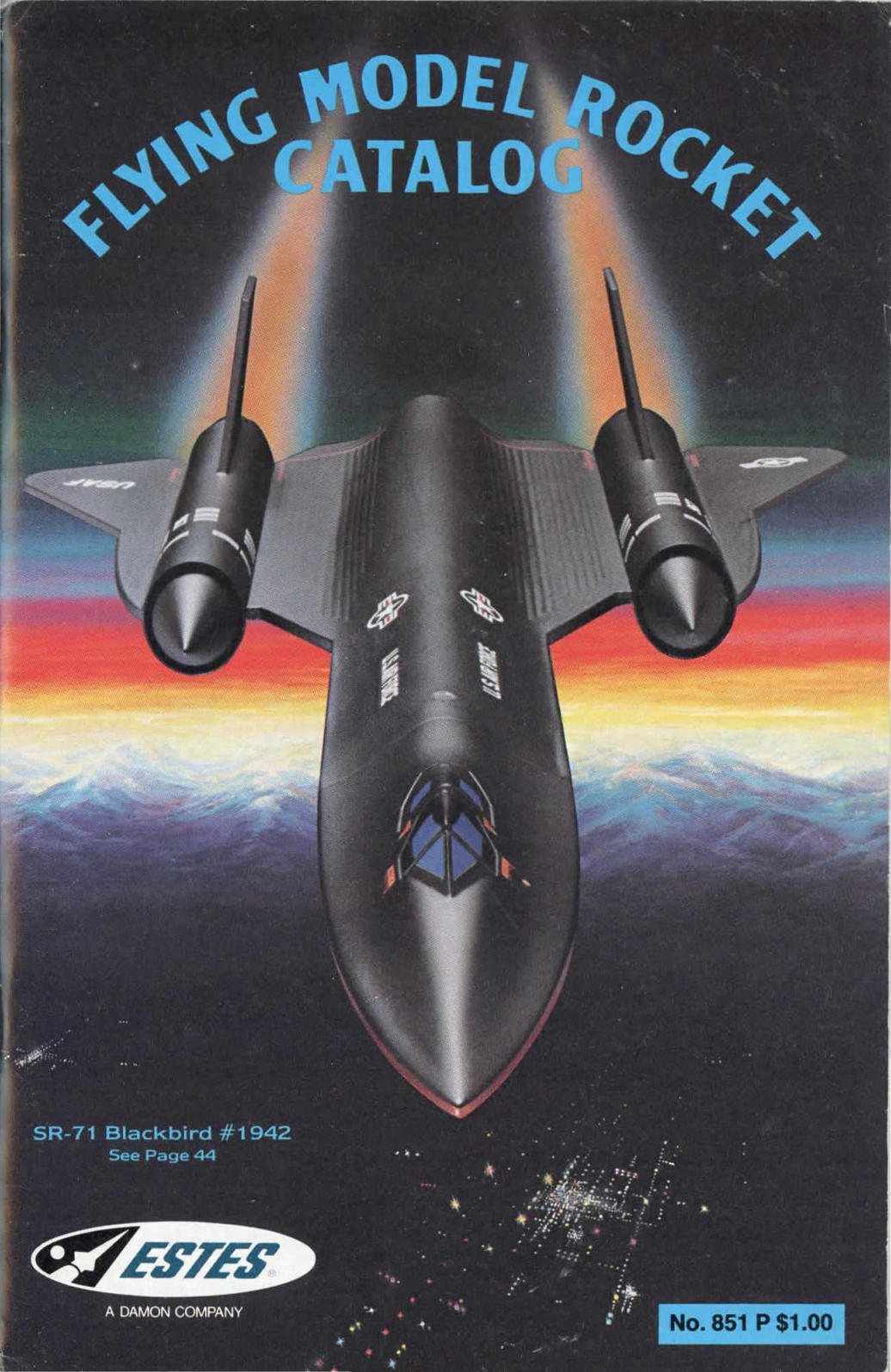
Send in your order for merchandise totaling **$50.00** or more and receive a **FREE** Mean Machine kit.

Limit-One Free Rocket Kit Per Order

These special free offers are available only for orders received by December 31, 1985. Orders must be accompanied by full payment (check, money order, Master Charge, or Visa charge). Order qualification for a free kit is based on amount of merchandise ordered. If you qualify for one of these free rocket kits, just list the name and special kit number from this page as the last item on your order. List "Free" in the column for total price. These special free offers may not be used with any other special offers, bonus coupons, or discounts.

IMPORTANT: *If you do not list your Free Rocket choice on your order form, you will not receive it!*

FLYING MODEL ROCKET CATALOG



SR-1 Blackbird #1942
See Page 44

ESTES®
A DAMON COMPANY

No. 851 P $1.00

SKILL LEVEL 1 STARTER KIT

SIZZLER
FLYING MODEL ROCKETRY STARTER KIT

SKILL LEVEL 1 Includes the 23 inch long Sizzler model rocket kit featuring parachute recovery and flights over 900 feet. Also included is the Big Foot™ Launch System with big "two-foot-print" imprint for maximum launch pad stability. Includes blast deflector plate, and 1/8" x 36" launch rod. Legs remove easily for compact storage. Flight Pak includes three NAR safety-certified model rocket engines, parachute recovery wadding and Solar Igniters. *(Requires 4 alkaline type "D" cell batteries, glue and finishing supplies - Not Included.)* Ship. Wt.: 2 lbs.
ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.

No. 1432
$25.95

MODEL ROCKET FLIGHT SEQUENCE

4 MODEL REACHES PEAK ALTITUDE AND EJECTION CHARGE ACTIVATES RECOVERY SYSTEM
5 RECOVERY PARACHUTE IS DEPLOYED
3 MODEL STREAKS SKYWARD TO PEAK ALTITUDE DURING COAST PHASE
1 ROCKET IGNITION AND LIFT-OFF FROM ELECTRICALLY OPERATED LAUNCH SYSTEM
6 TOUCHDOWN & SAFE RECOVERY
2 HIGH THRUST AND ACCELERATION FOR POWERED FLIGHT
7 READY TO BLAST-OFF AGAIN!
ESTES

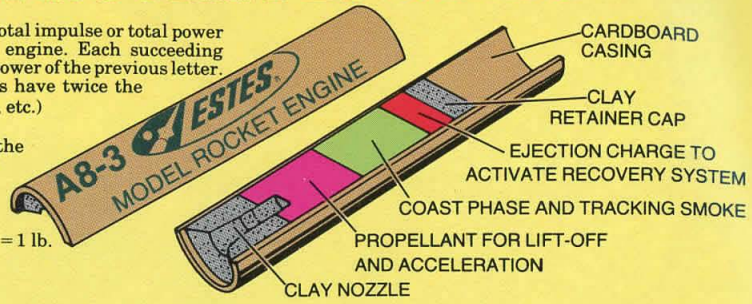
MODEL ROCKET ENGINES

A Letter indicates total impulse or total power produced by the engine. Each succeeding "letter" has twice the power of the previous letter. (Example: "B" engines have twice the power of "A" engines, etc.)

8 Number shows the engine's average thrust in Newtons or the average push exerted by the engine. (4.45 Newtons = 1 lb.

Average thrust = Newton-seconds divided by thrust duration.

3 Number of seconds between the end of thrusting and the ejection charge.

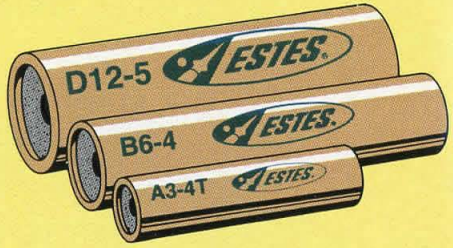


The design and development of the Estes model rocket engine was the real beginning of the safe, educational and fun activity model rocketry has become.

Twenty-seven years of Estes engineering has produced today's safety-proven model rocket engine. The pre-manufactured, solid-propellant engine provides thrust for lift-off and acceleration to high altitide, allows for a timed delay period to reach peak altitude while providing a smoke trail for easy tracking, and supplies ejection power for the recovery system to bring your rocket safely back to Earth.

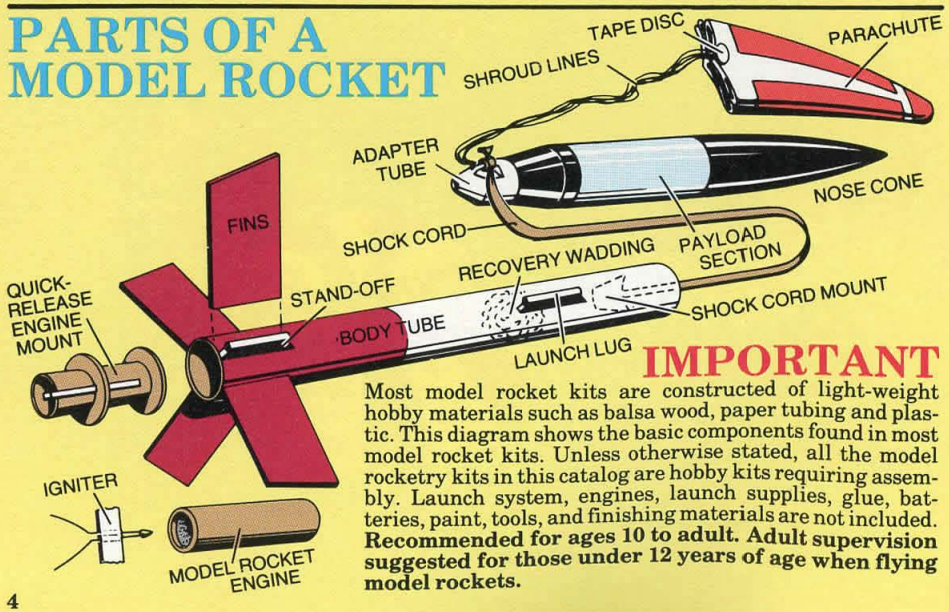
Manufactured under strict, quality-controlled conditions within exacting tolerance limits, *(More than 3% of all Estes engines are static-tested.)* Estes engines comply with the codes of the National Fire Protection Association and are "SAFETY AND CONTEST CERTIFIED" by the National Association of Rocketry.

Estes model rocket engines have been proven consistent and reliable in more than 225,000,000 launchings.



Unless otherwise specified, all model rocket kits in this catalog use only one of the of the three sizes of engines shown here. Kits with recommended engines ending with the letter "T" use only mini-engines. Kits where "D" engines are recommended use only the larger "D" size. All other kits use the regular size engines.

PARTS OF A MODEL ROCKET

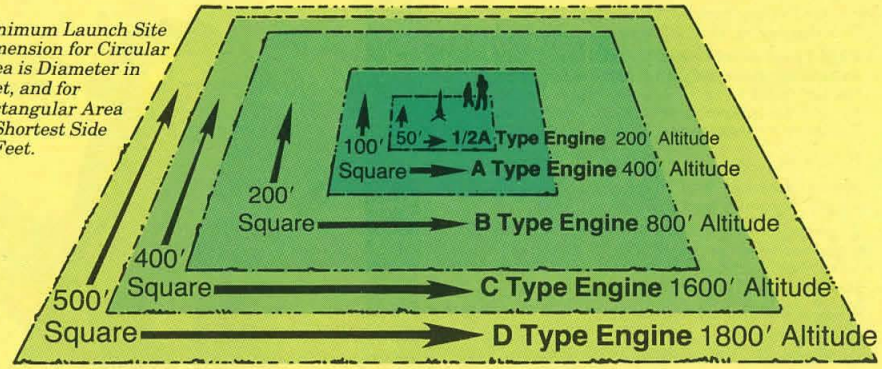


IMPORTANT

Most model rocket kits are constructed of light-weight hobby materials such as balsa wood, paper tubing and plastic. This diagram shows the basic components found in most model rocket kits. Unless otherwise stated, all the model rocketry kits in this catalog are hobby kits requiring assembly. Launch system, engines, launch supplies, glue, batteries, paint, tools, and finishing materials are not included. **Recommended for ages 10 to adult. Adult supervision suggested for those under 12 years of age when flying model rockets.**

RECOMMENDED LAUNCH AREA:

Minimum Launch Site Dimension for Circular Area is Diameter in Feet, and for Rectangular Area is Shortest Side in Feet.



In choosing a launch area, the larger the better. Football fields, parks and playgrounds are great. The diagram above shows the smallest recommended sizes. Remember, the larger the launch area, the better your chance of recovering your rocket. Choose a large field away from power lines, tall buildings, tall trees, and low flying aircraft.

MAKE SURE THE AREA WHERE YOU SET UP YOUR LAUNCHER IS CLEAR OF OBSTRUCTIONS AND HAS NO BROWN GRASS, DRY WEEDS, OR HIGHLY FLAMMABLE MATERIALS.

NAR/HIAA MODEL ROCKETRY SAFETY CODE

1. **Construction**—My model rockets will be made of lightweight materials such as paper, wood, plastic and rubber, without any metal as structural parts.
2. **Engines**—I will use only pre-loaded factory-made NAR safety-certified model rocket engines in the manner recommended by the manufacturer. I will not change in any way nor attempt to reload these engines.
3. **Recovery**—I will always use a recovery system in my rockets that will return them safely to the ground so that they may be flown again.
4. **Weight Limits**—My model rocket will weigh no more than 453 grams (16 oz.) at lift-off and the engine will contain no more than 113 grams (4 oz.) of propellant.
5. **Stability**—I will check the stability of my model rockets before their first flight, except when launching models of already proven stability.
6. **Launching System**—The system I use to launch my model rockets must be remotely controlled and electrically operated, and will contain a switch that will return to "off" when released. I will remain at least 15 feet from any rocket that is being launched.
7. **Launch Safety**—I will not let anyone approach a model rocket on a launcher until I have made sure that either the safety interlock key has been removed or the battery has been disconnected from my launcher.
8. **Flying Conditions**—I will not launch my model rockets in high winds, near buildings, power lines, tall trees, low flying aircraft, or under any conditions which might be dangerous to people or property.
9. **Launch Area**—My model rockets will always be launched from a cleared area, free of any easy to burn materials, and I will only use flame resistant recovery wadding in my rockets.
10. **Jet Deflector**—My launcher will have a jet deflector device to prevent the engine exhaust from hitting the ground directly.
11. **Launch Rod**—To prevent accidental eye injury I will always place the launcher so the end of the rod is above eye level or cap the end of the rod with my hand when approaching it. I will never place my head or body over the launching rod. When my launcher is not in use I will always store it so that the launch rod is not in an upright position.
12. **Power Lines**—I will never attempt to recover my rocket from power lines or other dangerous places.
13. **Launch Targets & Angle**—I will not launch rockets so their flight path will carry them against targets on the ground, and will never use an explosive warhead nor a payload that is intended to be flammable. My launching device will always be pointed within 30 degrees of vertical.
14. **Pre-Launch Test**—When conducting research activities with unproven designs or methods, I will, when possible, determine their reliability through pre-launch tests. I will conduct launchings of unproven designs in complete isolation from persons not participating in the actual launching.

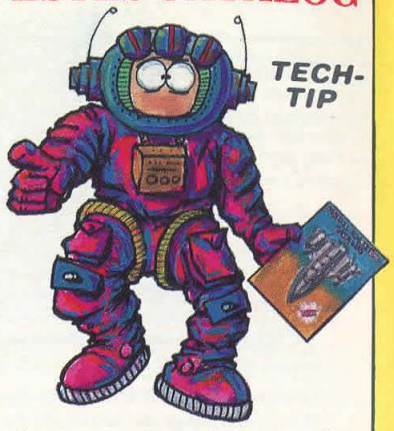
As a member of the Estes Model Rocketry Program, I promise to faithfully follow all rules of safe conduct as established in the above code.

*Signature*_____

HERE'S HOW TO USE YOUR ESTES CATALOG

Information for each rocket kit is provided on the page where the rocket is displayed. This information includes:

- Skill Level number recommends the general skill level and experience necessary for a rocketeer to successfully complete the kit. Skill Level 1 kits are suggested for beginners, Skill Level 2 for intermediate rocketeers, and so on to Skill Level 5, expert rocketeers. Kits are categorized by skill level.
- Kit Name
- Special features and additional kit information including length, diameter and weight.
- Engines lists all recommended engines to fly the rocket. Engines are listed from least to most powerful. (1st Flt.) indicates which engine should be used to become familiar with your rocket's flight profile.
- Product number for kit which should always be used when ordering.
- Price of the kit (or see Price List.) ***All prices in this catalog are subject to change without notice.***
- Average Shipping Weight for kits.



Kit Feature Symbols indicate the following kit features:

12 Parachute & Size
Streamer Recovery
Die-Cut Balsa Fins or Paper Parts
Plastic Nose Cone
Balsa Nose Cone
Plastic Fins or Fin-Unit
Kit Decals
Quick-Release Engine Mount

Also, be sure to read your catalog thoroughly to find my Tech Tips. These tips will enable you to receive greater enjoyment in all your model rocketry activities. Keep 'em flying!

Model Rocketry Is An Internationally Recognized Hobby With A Safety Record Of More Than 225 Million Successful Model Rocket Launchings.

Estes Model Rocket Engines Are Safety Tested And Contest Certified By:
- U.S. National Association of Rocketry
- Canadian Association of Rocketry

Estes Model Rocket Engines Have Been Tested And Approved By:
- United States Department of Transportation
- Truesdail Laboratories, Inc.
- Canadian Department of Energy, Mines, and Resources
- Government of West Germany

Estes Model Rocketry Products Meet The Standards And Requirements Established By:
- National Fire Protection Association
- U.S. Consumer Product Safety Commission
- U.S. Food & Drug Administration
- U.S. Department of Transportation
- Federal Aviation Administration
- U.S. Postal Service
- United Parcel Service
- American Insurance Association
- International Air Transport Association
- Inter-Governmental Maritime Consultative Organization
- Air Line Pilots Association

Model Rocketry Is Endorsed As A Safe And Rewarding Hobby By:
- Cub Scouts of America
- Boy Scouts of America
- YMCAs
- National 4-H Clubs
- Civil Air Patrol
- NASA
- United States Air Force
- U.S.A.F.-J.R.O.T.C. Programs
- 15,000 Elementary, Jr. High, and High Schools
- Major Colleges and Universities
- Hundreds of Camp and Recreation Programs

ESTES A DAMON COMPANY

FULL ONE YEAR WARRANTY

ESTES A DAMON COMPANY

Your Estes product is warranted against defects in materials or workmanship for one year from the date of the original purchase. Any Estes product which, because of a manufacturing mistake, malfunctions or proves to be defective within the one-year warranty period will be repaired or replaced, at Estes' option and at no charge to you, provided it is returned to Estes with proof of purchase. This warranty does not cover incidental or consequential damage to persons or property caused by the use, abuse, misuse, failure to comply with operating instructions or improper storage of the warranted product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

For repair or replacement under this warranty, please return the defective part of your Estes product with proof of purchase to:

Estes Industries,
Customer Service Department,
Penrose, Colorado 81240.

SKILL LEVEL 1 STARTER KIT

A GREAT PLACE TO START!

ALPHA III
FLYING MODEL ROCKETRY STARTER KIT

SKILL LEVEL 1 Includes easy-to-build Alpha III model rocket kit. Pre-colored parts - no painting required! Also includes Porta-Pad tri-pod launcher with blast deflector plate and 1/8" x 36" two-piece launch rod, Solar Launch Controller and Flight Pak including three NAR safety-certified model rocket engines, parachute recovery wadding and Solar Igniters. *(Requires 4 alkaline AA batteries, glue and finishing supplies-Not Included.)* Ship. Wt. 3 lbs.

ENGINES: 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7

No. 1406

$21.95

SKILL LEVEL 1 STARTER KIT

CHALLENGER - 1
FLYING MODEL ROCKETRY STARTER KIT

SKILL LEVEL 1 Includes easy-to-assemble, high-performance Challenger-1 model rocket featuring orange plastic nose cone and fin unit. No painting required! Flights over 1000 feet. Also includes Challenger-1 launch control system with futuristically designed launch controller, 15 feet of launch cable, micro-clips, launch pad with blast deflector plate and 1/8″ x 36″ launch rod. Flight Pak includes three NAR safety-certified model rocket engines, parachute recovery wadding and reliable Solar Igniters for three exciting flights. *(Requires 6 or 12 volt lantern battery and glue - Not Included).* Ship. Wt. 1 lb.

ENGINES: 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7

No. 1416

$14.95

SKILL LEVEL 1 STARTER KIT

DELUXE
FLYING MODEL ROCKETRY STARTER KIT

SKILL LEVEL 1 Complete with everything you need including Alpha model rocket kit, construction supplies, finishing materials, Porta-Pad launcher with blast deflector plate and two-piece 1/8″ x 36″ launch rod, Solar Launch Controller, and Flight Pak with 3 high performance NAR safety-certified model rocket engines, Solar Igniters and parachute recovery wadding. *(Requires 4 alkaline AA batteries for operation - Not Included).* Ship. Wt. 3 lbs.

ENGINES: 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7

No. 1407

$27.95

SKILL 2 LEVEL OUTFIT

SPACE SHUTTLE COLUMBIA
FLYING MODEL ROCKETRY OUTFIT

SKILL LEVEL 2 Designed to include the latest technology, this starter kit features the Space Shuttle Columbia kit (see page 36), Power-Pulse™ Launch Controller, Porta Pad launcher with blast deflector and 1/8" x 36" launch rod. Also included are three NAR safety-certified model rocket engines, parachute recovery wadding and Solar Igniters - everything you need to get your Shuttle program started today. *Requires 6 volt Polaroid® Pola-Pulse™ P-100 battery, white glue, plastic cement, paint and finishing supplies - Not Included.)* Ship Wt. 1 lb.
ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5

No. 1433
$25.95

SKILL 3 LEVEL OUTFIT

STEALTH ELITE
FLYING MODEL ROCKETRY OUTFIT

SKILL LEVEL 3 This elite outfit for the experienced model builder features the futuristic Stealth fighter (see Page 44) capable of flights to 900 feet. Also included is the high-technology Power-Pulse™ Launch Controller, Porta-Pad Launch Pad with blast deflector and 1/8" x 36" launch rod, plus three NAR safety-certified model rocket engines, parachute recovery wadding and Solar Igniters. "The Modelers' Choice" to update your model rocketry fleet. *(Requires 6 volt Polaroid® Pola-Pulse™ P-100 battery, white glue, plastic cement, contact cement, paint and finishing supplies - Not Included.)* Ship Wt.: 2 lbs.
ENGINES: A8-3, B4-4 (1st Flt.), B6-4, C5-3, C6-3, C6-5.

No. 1436 $26.95

SKILL LEVEL 1

Recommended for Beginners

COURIER

SKILL LEVEL 1 Single Stage Performance. Scale-like appearance of two-stage sounding rocket. Flights over 1100 feet. Length: 12.13″ Dia. 0.736″ Wt. 0.53 oz.
ENGINES: 1/2A6-2, A8-5 (1st Flt.), B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.
No. 1911
$3.95

YANKEE

SKILL LEVEL 1 Easy-to-build, yet performance that will rival any rocket. Capable of flights over 2,000 feet with 30″ long streamer recovery. Length: 11″ Dia. 0.736″
Wt. 0.42 oz.
ENGINES: 1/2A6-2, A8-3, A8-5 (1st Flt.), B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.
No. 1381
$2.95

PULSAR

SKILL LEVEL 1 Excellent first choice for beginners uses low-cost mini-engines. Easy-to-assemble, Pulsar delivers super performance flights and returns to Earth via break-apart recovery. Can be flown over and over again. Length: 9″ Dia. 0.544″ Wt. 0.25 oz.
ENGINES: 1/2A3-2T(1st Flt.), A3-4T, A10-3T
No. 0870
$2.49

MOSQUITO

SKILL LEVEL 1 The smallest of all Mini-Brutes combines fantastic performance with feather-weight recovery. Balsa and paper construction with simple spray paint decor makes for quick-and-easy assembly. Length: 3.9″ Dia. 0.541″ Wt. 0.1 oz.
ENGINES: 1/2A3-4T (1st Flt.), A10-3T
No. 0801
$1.49

ZINGER

SKILL LEVEL 1 This sporty little flier with 18″ streamer recovery will reach "awesome" altitudes up to 2000 feet. Length: 10.25″ Dia. 0.736″ Wt. 0.3 oz.
ENGINES: A8-5(1st Flt.), B4-6, B6-6, C6-7.
No. 1917
$2.49

Engines, launch system, glue, and finishing supplies not included. Avg. Ship. Wt. 6 oz.

SKILL LEVEL 1
Recommended for Beginners

STREAK
SKILL LEVEL 1 Lightweight, wind-cheating design (1/8 oz. without engine). Great for contests and records. Features simple featherweight recovery. Length: 5.6″ Dia. 0.720″ Wt. 0.1 oz.
ENGINES: A8-5(1st Flt.), B4-6, B6-6, C6-7.
No. 1204
$2.95

STAR DART
SKILL LEVEL 1 High performance, mini-engine powered sport rocket. Flies over 1,000 feet and returns via streamer recovery. Very easy-to-assemble. Length 8.4″ Dia. 0.541″ Wt. 0.225 oz.
ENGINE: 1/2A3-4T (1st Flt.)
No. 0860
$2.95

VECTOR
SKILL LEVEL 1 Features fast assembly, economical mini-engine power, break-apart recovery, and flight-after-flight fun. Length: 7.75″ Dia. 0.544″ Wt. 0.25 oz.
ENGINES: 1/2A3-2T(1st Flt.), A3-4T, A10-3T
No. 0871
$2.49

SCOUT
SKILL LEVEL 1 Estes Industries first model rocket, originally developed in 1959. Teaches you elementary balance and design principles. Sleek lines and tumble recovery for really exciting flights. Pat. No. 3,114,317. Length: 7″ Dia. 0.765″ Wt. 0.3 oz.
ENGINES: 1/2A6-2 (1st Flt.), A8-3, B4-4, B6-4, B8-5, C6-5.
No. 1201
$2.95

SPIN FIN
SKILL LEVEL 1 Unique spin-flight design creates dramatic curling smoke trail on its way up. Spectacular flights over 1,200 feet with 30″ streamer recovery. Length: 11.6″ Dia. 0.736″ Wt. 0.6 oz.
ENGINES: A8-5 (1st Flt.), B4-6, B6-6, C6-7.
No. 1355
$3.95

Engines, launch system, glue and finishing supplies not included. Avg. Ship. Wt. 8 oz.

SKILL LEVEL 1
Recommended for beginners

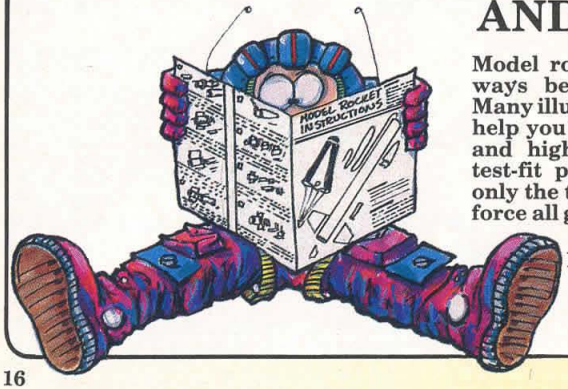
COUGAR
SKILL LEVEL 1 High performance, sleek sport flier can attain altitudes over 1000 feet. Length: 17.5″ Dia. 0.976″ Wt. 1.06 oz.
ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5,
No. 1923
$4.49

LASER
SKILL LEVEL 1 Super flier featuring fast assembly and high-tech appearance reaches altitudes of 1000 feet and returns safely via streamer recovery. Length: 12.25″ Dia. 0.736″ Wt. 0.79 oz.
ENGINES: 1/2A6-2(1st Flt.), A8-3, B4-4, B6-4, C6-5
No. 1938
$2.95

BIG YANK
SKILL LEVEL 1 Mini-engine powered sport flier. Easy-to-build and capable of flights over 400 feet. Length: 26.5″ Dia. 0.736″ Wt. 0.92 oz.
ENGINES: 1/2A3-2T (1st Flt.), A3-4T, A10-3T.
No. 0868
$3.95

WIZARD
SKILL LEVEL 1 Simple and quick-to- assemble. One of the highest performing vehicles in Estes' fleet with its 1,600 foot altitude capability and huge 30″ streamer recovery system that makes it easy-to-track. Length: 12″ Dia. 0.736″ Wt. 0.79 oz.
ENGINES: 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.
No. 1292
$2.95

TECH-TIP #1



CONSTRUCTION AND FINISHING

Model rocket kit instructions should always be read and followed carefully. Many illustrations and tips are included to help you build a more attractive, durable and higher-flying rocket. Measure and test-fit parts before applying glue. Use only the type of glue recommended. Reinforce all glue joints. Apply several coats of sanding sealer to fill balsa wood pores, sanding each layer till it is smooth. Spray on two or three light coats of paint for a smooth, even finish on your rocket.

SKILL LEVEL 1

Engines, launch system, glue and finishing supplies not included.
Avg. Ship. Wt. 9 oz.

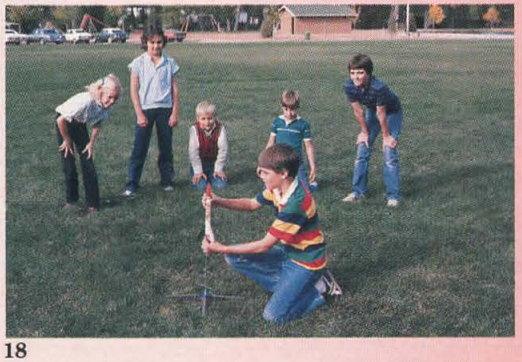
SKILL LEVEL 1
Recommended for Beginners

ECLIPSE
SKILL LEVEL 1 Reach altitudes over 600 feet with this great Mini-Brute sport flier. Very high performance design. Length: 12.1″ Dia. 0.736″ Wt. 0.51 oz.
ENGINES: 1/2A3-2T (1st Flt.), 1/2A3-4T, A3-4T, A10-3T
No. 0846
$5.49

ASTRO BEE
SKILL LEVEL 1 Reach altitudes over 1,200 feet with this sounding rocket style design. Length: 14.75″ Dia. 0.976″ Wt. 0.823 oz.
ENGINES: 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.
No. 1356
$5.49

ASTRO
SKILL LEVEL 1 Over 1 foot tall, this super flier can reach 1000 feet. With fast assembly and streamer recovery, Astro is fun-to-fly over and over. Length: 12.75″ Dia. 0.736″ Wt. 0.79 oz.
ENGINES: 1/2A6-2(1st Flt.), A8-3, B4-4, B6-4, C6-5
No. 1937
$2.95

STINGER
SKILL LEVEL 1 A sleek sport performer capable of flights over 1000 feet. Easy-to-build and fun-to-fly . Length: 13.5″ Dia. 0.976″ Wt. 0.98 oz.
ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.
No. 1905
$4.95



Engines, launch system, glue and finishing supplies not included. Avg. Ship. Wt. 10 oz.

SKILL LEVEL 1
Recommended for beginners

SKY HOOK
SKILL LEVEL 1 An excellent kit for your second rocket. Easy-to-build with terrific performance flight-after-flight. Length: 12″ Dia. 0.765″ Wt. 0.7 oz.
ENGINES: 1/2A6-2 (1st Flt.), A8-3, A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.
No. 1208
$4.95

HARPOON
SKILL LEVEL 1 Realistic missile design makes spectacular flights to 1000 feet with 18″ streamer recovery. Length: 13.75″ Dia. 0.976″ Wt. 1.3 oz.
ENGINES: A8-3 (1st Flt.), B4-4, B6-4, C6-5
No. 1915
$4.95

MAVERICK
SKILL LEVEL 1 This sleek sport performer features streamer recovery and flights over 1000 feet. Easy-to-build and fun-to-fly. Length: 16.5″ Dia. 0.976″ Wt. 1.13 oz.
ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5
No. 1904
$4.95

CYCLONE
SKILL LEVEL 1 Flights over 800 feet make this one you'll want to add to your fleet. Unique decal and big size make it ideal for demos. Length: 16″ Dia. 1.32″ Wt. 1.48 oz.
ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.
No. 1907
$5.95

Engines, launch system, glue and finishing supplies not included. Avg. Ship. Wt. 10 oz.

SKILL LEVEL 1
Recommended for Beginners

SUNBIRD
SKILL LEVEL 1 High performance sport model with sunny yellow paint scheme and red sunbird decal will reach altitudes up to 1200 feet. Length: 13″ Dia. 0.736″ Wt. 0.64 oz.
ENGINES: 1/2A6-2, A8-3(1st Flt.), B4-4, B6-4, B8-5, C6-3, C6-5, C6-7
No.1936
$3.49

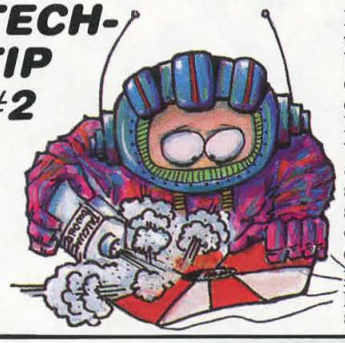
MINI MEAN MACHINE
SKILL LEVEL 1 Mini-powered version of our huge Mean Machine kit. Over 38 inches long and capable of flights over 700 feet. Length: 38.5″ Dia. 0.736″ Wt. 1.06 oz.
ENGINES: 1/2A3-2T(1st Flt.), A10-3T.
No. 0865
$5.95

SIZZLER
SKILL LEVEL 1 High performance design for flights over 900 feet. A long bird that's great for demonstrations. Length: 23.5″ Dia. 0.976″ Wt. 1.41 oz.
ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5
No. 1906
$5.95

ALPHA
SKILL LEVEL 1 The ideal kit for your first or second rocket. Swept-fin design makes it a really great performer. Features plastic nose cone and balsa fins. Length: 12.25″Dia. 0.976″ Wt. 0.8 oz.
ENGINES: 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.
No. 1225
$4.95

ROCKET RECOVERY

TECH-TIP #2



In parachute and streamer models, loosely crumple the recommended amount (about 2½ times the body tube dia.) of flame-resistant recovery wadding in your rocket's body tube to protect the recovery system from the engine's hot gases. Lightly dust parachutes with talcum powder to prevent sticking. Fold parachutes to form a spike, fold again, and wrap loosely with shroud lines. Fold streamers in half, then roll up. Place parachute or streamer in body tube above wadding. Put nose cone and coiled shock cord into body tube. Wadding, parachute or streamer, and nose cone must not fit tightly. The engine's ejection charge must deploy the recovery system to return your model safely.

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship. Wt. 10 oz.

SKILL LEVEL 1

Recommended for Beginners

KADET

SKILL LEVEL 1 Achieve flights over 1,000 feet with this super high flying sport model. Nearly indestructible with pre-colored plastic nose cone and fin-unit. Quick and easy-to-assemble. No painting required! Easy-track recovery with 30″ fluorescent steamer. Length: 15″Dia. 0.98″ Wt. 1.13 oz.
ENGINES: 1/2A6-2, A8-3,(1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7

No. 1328
$5.49

MARAUDER

SKILL LEVEL 1 Easy-to-build sport flier with large payload section. Flies cargo experiments to over 750 feet. Length: 20.4″ Body Dia. 1.325″ Payload Dia. 1.637″ Wt. 2.3 oz.
ENGINES: B4-4 (1st Flt.), B6-4, C6-5

No. 1922
$5.95

COMET

SKILL LEVEL 1 High performance sport flier over 2 feet long. Quick and easy-to-assemble. Delivers great flights over 1,200 feet. Length: 24.25″ Dia. 1.325″ Wt. 1.8 oz.
ENGINES: A8-3(1st Flt), B4-4, B6-4, B8-5, C6-5, C6-7

No. 1368
$6.49

FALCON COMMANDER

SKILL LEVEL 1 Futuristic forward swept-wing space-craft. Terrific Skill Level 1 exotic model. Can achieve altitudes up to 1,000 feet. Length: 19.12″ Dia. 0.976″ Wt. 1.1 oz.
ENGINES: A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.

No. 1364
$6.49

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship. Wt. 10 oz.

SKILL LEVEL 1

Recommended for Beginners

ALPHA III

SKILL LEVEL 1 Another great first or second kit. Plastic nose cone and fin assembly make for easy, quick assembly. This rocket will deliver outstanding performance flight-after-flight. Length 12.25″ Dia. 0.976″ Wt. 1.2 oz.
ENGINES: 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.

No. 1256
$5.95

X-RAY

SKILL LEVEL 1 Perfect for your first payloader or second kit. Features large see-through payload/cargo section. The recommended single-stage payload vehicle for small biological or insect projects. Length: 16.75″ Dia. 0.736″ Wt. 0.7 oz.
ENGINES: 1/2A6-2, A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.

No. 1218
$7.95

BIG BERTHA

SKILL LEVEL 1 Perfect kit for a "big" second rocket. Ideal for demonstration launches. Slow, realistic lift-off for really spectacular flights. 24″ from nose to tail. A real favorite of rocketeers. Length: 24″ Dia. 1.637″ Wt. 2.2 oz.
ENGINES: A8-3, B4-2, B4-4, B6-2 (1st Flt.), B6-4, B8-5, C6-5

No. 1223
$8.95

MX MISSILE

SKILL LEVEL 1 Easy-to-build semi-scale model of our nation's newest ICBM proposal with flights to 750 feet. Features include removable display engine nozzle and detachable clear plastic fin-unit which must be added for flight. Length: 15.5″ Dia. 1.595″ Wt. 1.94 oz.
ENGINES: A8-3, B4-4 (1st Flt.), B6-4, C6-3, C6-5.

No. 1916
$6.95

Engines, launch system, glue and finishing supplies not included. Avg. Ship. Wt. 10 oz.

ESTES
A DAMON COMPANY

BECOME A MEMBER OF THE MOST EXCITING ROCKET CLUB ON EARTH!

ESTES AEROSPACE CLUB

THRUST BAR ACHIEVEMENT PROGRAM

SKILL LEVEL ONE
BEGINNER/NEW EAC MEMBER

SKILL LEVEL TWO
INTERMEDIATE ROCKETEER

SKILL LEVEL THREE
CRAFTSMAN ROCKETEER

SKILL LEVEL FOUR
ADVANCED ROCKETEER

SKILL LEVEL FIVE
EXPERT ROCKETEER

ESTES AEROSPACE CLUB

Join more than 25,000 Estes rocketeers getting the most out of model rocketry. The EAC Thrust Bar Achievement Program awards members with iron-on thrust bars & achievement certificates as they progress from one skill level to the next. Your membership includes:

VIPER ROCKET KIT
Club's Exclusive High Performance Design.
REC. ENGINES: 1/2A3-2T (1st Flt.), A3-4T, A10-3T.
MEMBERSHIP. CERTIFICATE CLUB EMBLEM
Official iron-on patch. As you progress to higher skill levels, you receive additional iron-on "thrust" bars.
DECAL SHEET
Identify your rockets as part of the EAC fleet!
COPY OF MODEL ROCKET NEWS
Features free plan designs, technical articles, contests, rocketeer contributions and more.
RANGE BOX STICKERS
EAC STATIONERY
MODEL ROCKETRY TECHNICAL MANUAL
Includes information on construction techniques, finishing, stability, tracking, recovery systems, multi-staging, and boost gliders plus much, much more.
JOIN NOW!
BECOME AN ESTES AEROSPACE CLUB ROCKETEER TODAY!!
Simply Check the EAC box on your order form and include your payment. Ship. Wt. 9 oz. Regular EAC Membership.

10 **No. 1447** **$6.49**

SKILL LEVEL 2

TAKE REAL HIGH ALTITUDE PHOTOS!

Actual "Astro Cam 110" Photo *Courtesy David Moosa, Eunice, LA*

ASTRO-CAM 110
AERIAL CAMERA WITH DELTA II LAUNCH VEHICLE

SKILL LEVEL 2 Experience the excitement of taking color photographs from hundreds of feet in the sky. Astro-Cam 110's 1/500th second shutter speed is activated at ejection just prior to parachute deployment. Features include easy-assembly, acrylic lens, plastic housing, glass first surface mirror, and high performance design. Easy to operate and shoots one full-color 110 photo per flight. Delta II features white body tube and pre-colored plastic fin-unit for stability. No painting required. Uses Kodak Kodacolor 110 color print film, ASA 400, or equivalent-Not Included.*Film and developing are available locally.*Camera not sold separately. Use Delta II or Challenger II (see page 42) as launch vehicle. Other launch vehicles are not recommended. *Specifications - Camera with Launch Vehicle:* Length: 19.1" Dia. 1.34" Fin Span 4.75" Wt. 3.75 oz. *Camera Specifications:* Length: 6.5 " Dia. 1.39" Wt. 1.36 oz. (without film). Wt. 1.76 oz. (with film) *(Engines, launch system, film, glue and finishing supplies not included.)* Ship. Wt. 14 oz. ENGINES: B8-5, C6-5, C6-7 (1st Flt.).

12 **No. 1327** **$28.95**

SKILL LEVEL 2

Recommended for individuals with some model building experience.

FOX FIRE

SKILL LEVEL 2 In the not-so-distant future interplanetary fighter ships may resemble this fantastic model able to achieve altitudes over 1000 feet. Length: 13.6″ Dia. 0.976″ Wt. 0.69 oz.
ENGINES: A8-3(1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-3, C6-5, C6-7

No. 1941
$3.95

MINI TRI PAK

SKILL LEVEL 2 **Three unique rocket kits in one package - for one low price! Includes:**

STAR SEEKER

Interstellar speeder for short hops between galaxies. Mini-power boosts it near 1500 feet. The model breaks apart into two connected pieces for safe recovery. Length: 6.9″ Dia. 0.5″ Wt. 0.26 oz.
ENGINES: 1/2A3-2T (1st Flt.), 1/2A3-4T, , A3-4T, A10-3T.

STING RAY

Two-stage mini performance. Out-of-sight flights to 2500 feet! Length: 8.4″ Dia. 0.5″ Wt. 0.33 oz.
ENGINES: Booster: A10-0T (1st Flt.)
Upper Stage: 1/2A3-2T (1st Flt.), 1/2A3-4T, A3-4T, A10-3T.

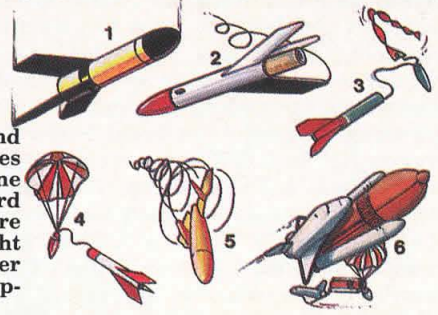
S.C.R.A.M.

Military styled surface-to-air missile. Flights over 1000 feet. Break-apart recovery. Length: 7.3″ Dia. 0.5″ Wt. 0.29 oz.
ENGINES: 1/2A3-2T (1st Flt.), 1/2A3-4T, A3-4T, A10-3T.

MINI TRI PAK
No. 0866
$5.95

TECH-TIP #3

RECOVERY SYSTEMS



Most recovery systems depend on drag (wind resistance) to slow the rocket. Each changes the model from a streamlined object to one which the air can "catch against" and retard its descent. Six main recovery methods are used by model rocketeers: 1. Featherweight Recovery 2. Tumble Recovery 3. Streamer Recovery 4. Parachute Recovery 5. Helicopter Recovery 6. Glide Recovery.

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship. Wt. 11 oz.

SKILL LEVEL 2

Recommended for individuals with some model building experience.

AERO-FIN

SKILL LEVEL 2 Unique five-fin design. Flights over 1200 feet with 18″ streamer recovery. Length: 11.62″ Dia. 0.736″ Wt. 0.53 oz.
ENGINES: 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.
No. 1390
$4.95

WASP

SKILL LEVEL 2 This sporty model with scale-like appearance is "D" powered for flights up to 1,200 feet. Foil wrap-on decal assists in tracking and locating. Length: 16.4″ Dia. 1.325″ Wt. 1.6 oz.
ENGINES: D12-3 (1st Flt.), D12-5.
No. 1930
$4.95

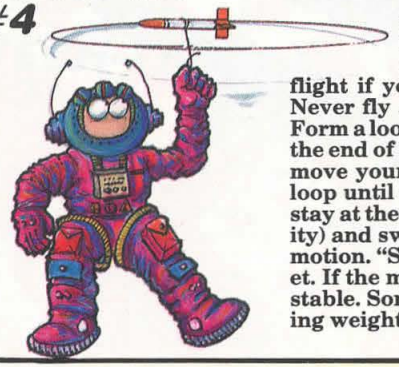
SEARCHER

SKILL LEVEL 2 This sporty model features sounding-rocket styling, parachute recovery and superb flights to 1000 feet. Nearly two feet tall. Length: 21.25″ Dia. 0.736″ Wt. 0.7 oz.
ENGINES: A8-5(1st Flt.), B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7
No. 1945
$5.49

MINI SHUTTLE

SKILL LEVEL 2 Sport scale version of the space shuttle orbiter. Uses regular size engines. Length: 9.37″ Dia. 1.63″ Wt. 1.35 oz.
ENGINES: A8-3 (1st Flt.), B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.
No. 1391
$4.95

TECH-TIP #4 ROCKET STABILITY



Stable rockets fly straight, predictable flights. Always make sure your rocket passes the "swing test" before flight if you have any doubt about its design. Never fly a rocket which fails the "swing test". Form a loop by making an adjustable slip knot in the end of a 6-10′ string. With the engine in place, move your rocket backward or forward in the loop until it is balanced. Tape the loop so it will stay at the model's balance point (center of gravity) and swing the rocket overhead in a circular motion. "Straight" flight indicates a stable rocket. If the model loops or flies erratically it is not stable. Sometimes this can be corrected by adding weight to the nose or adding area to the fins.

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship. Wt. 12 oz.

SKILL LEVEL 2

Recommended for individuals with some model building experience.

MAGICIAN

SKILL LEVEL 2 Large "D" powered model features fast assembly, starry decals, and heavy-duty swept-back fins for sky-high flights of 1000 feet. 12" parachute provides gentle descent. Length: 16.75" Dia. 1.325" Wt. 1.5 oz.
ENGINES: D12-5(1st Flt.), D12-7

No. 1943
$5.49

NOVA SCOUT SHIP

SKILL LEVEL 2 Scout ship from the Nova Star Galaxy Federation designed for planetary exploration. Our model flies to 900 feet. Length: 15" Dia. 0.976" Wt. 1.29 oz.
ENGINES: A8-3 (1st Flt.), B4-2, B4-4, B6-2, B6-4, B8-5, C6-3, C6-5.

No. 1392
$5.95

ADVANCED TARGET DRONE

SKILL LEVEL 2 U.S.A.F. Target Drone used to test the surface-to-air missiles of the 21st Century. Although it looks complex, the A.T.D. is fast and easy to build. Length: 15.3" Dia. 0.976" Wt. 1.48 oz.
ENGINES: A8-3, B4-4 (1st Flt.), B6-4, B8-5, C6-5.

No. 1913
$7.95

STAR SPEEDER

SKILL LEVEL 2 Single place galactic fighter capable of tremendous speed and maneuverability. The Estes version sports great performance with flights over 800 feet. Length: 13.75" Dia. 0.736" Wt. 1.3 oz.
ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5, C6-7.

No. 1366
$6.49

Engines, launch system, glue and finishing supplies not included. Avg. Ship. Wt. 12 oz.

ESTES®
A DAMON COMPANY

SKILL LEVEL 2

Recommended for individuals with some model building experience.

NASA PEGASUS

SKILL LEVEL 2 Medium range research craft for NASA missions after the Space Shuttle. Flies over 850 feet. Length: 19.75″ Dia. 1.325″ Wt. 2.36 oz.

ENGINES: A8-3 (1st Flt.), B4-2, B6-4, B8-5, C5-3, C6-3.

No. 1376

$8.49

FLYING SAUCER

SKILL LEVEL 2 Unidentified flying objects have been seen by thousands throughout time. Our version resembles a description given by many. This far-out space model with bright "alien" decals blasts off slowly and then flips over at apogee. The saucer shape slows its descent and it settles to Earth on its spring-bounce recovery system. Length: 3.3″ Dia. 7.65″ Wt. 2.6 oz.

ENGINE: C6-0(1st Flt).

No. 1947

$7.95

SPACE SHUTTLE COLUMBIA

SKILL LEVEL 2 Beautiful semi-scale model of America's newest spaceship. Assembles easily with molded plastic nose cone and orbital maneuvering system pods. Spectacular flights over 500 feet with 18″ parachute recovery. Makes a great display model too! Length: 10.7″ Wing Span 8.125″ Dia. 1.637″ Wt. 1.98 oz.

ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.

No. 1385

$9.95

TECH-TIP #5 LAUNCH PADS

Launch pads serve many uses. The launch rod guides the rocket's first few feet of flight until the rocket is moving fast enough for the fins to provide guidance. The blast plate deflects the engine's hot gases away from the launch pad and the ground. The safety cap is always kept on the rod except during actual launch to prevent injuries. Some launch pads tilt to direct the rocket into the wind so the wind will return it. Never tilt the rod more than 30° from vertical. Don't launch if it's too windy. Some launch pads also accomodate Maxi-Rods (#2244) for giant models.

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship. Wt. 12 oz.

SKILL LEVEL 2

Recommended for individuals with some model building experience.

MAXI ALPHA 3

SKILL LEVEL 2 Very easy-to-assemble giant scale version of one of our most popular kits. Can be ready-to-launch in approximately 30 minutes. Features new press-fit plastic fin-unit, plus plastic nose cone. "D" engine powered for truly spectacular flights up to 500 feet.Perfect for demonstrations. No painting required! Uses 3/16" launch rod. Length: 33.25" Dia. 2.6" Wt. 7.4 oz.
ENGINES: D12-3 (1st Flt.), D12-5.
No. 1321
$18.49

COBRA - 1500

SKILL LEVEL 2 Attains flights over 700 feet, with "C" type engine, from this extra long sport flier. Perfect demonstration model with large 18" parachute recovery. Length: 59" Dia. 1.325" Wt. 3.17 oz.
ENGINES: B4-2, B4-4 (1st Flt.), B6-2, B6-4, B8-5, C6-5.
No. 1294
$9.95

MEAN MACHINE

SKILL LEVEL 2 Tallest rocket in the Estes fleet. "D" engine powered for spectacular flights over 800 feet. Over 6 feet long with giant 24" 'chute. Easy-to-assemble for a really great looking bird. Uses 3/16" launch rod. Length: 78.75" Dia. 1.637" Wt. 5.8 oz.
ENGINE: D12-5
No. 1295
$13.95

ARIES S.S.T.

SKILL LEVEL 2 Futuristic transport capable of flights to 1,000 feet. Length: 13.5" Dia. 0.976" Wt: 1.34 oz.
ENGINES: A8-3 (1st Flt.),B4-4, B6-4, C6-5.
No. 1927
$5.49

Engines, launch system, glue and finishing supplies not included. Avg. Ship. Wt. 15 oz.

ESTES®
A DAMON COMPANY

SKILL LEVEL 2

Recommended for individuals with some model building experience.

TITAN II

SKILL LEVEL 2 Semi-scale version of the Titan ICBM with flights to 750 feet. Model features removable display engine nozzles and detachable clear plastic fin-unit which must be added for flight. Length: 19.5″ Dia. 1.595″ Wt. 2.37 oz.
ENGINES: B4-4 (1st Flt.), B6-4, C6-3, C6-5.
No. 1918
$7.49

NEPTUNE

SKILL LEVEL 2 Nearly 1½ feet tall, Neptune features surface-to-air missile appearance, flights to 900 feet with a "C" engine and 12″ parachute recovery. Length: 17.375″ Dia. 1.325″ Wt. 1.72 oz.
ENGINES: A8-3(1st Flt.), B6-4, B6-6, B8-5, C6-5, C6-7
1935
$5.95

DER RED MAX

SKILL LEVEL 2 Far-out super-fun model. Large stable design gives great sport performance. Length: 16.25″ Dia. 1.637″ Wt. 2.38 oz.
ENGINES: B4-2 (1st Flt.), B4-4, B6-2, B6-4, B8-5, C6-5, C6-7
No. 0651
$8.95

HONEST JOHN

SKILL LEVEL 2 Updated version of this famous U.S. Army Missile. Flights to 1,000 feet. Length: 19.2″ Dia. 1.325″ Wt. 1.78 oz.
ENGINES: A8-3 (1st Flt.), B6-4, B6-6, B8-5, C6-5, C6-7.
1919
$6.49

Engines, launch system, glue and finishing supplies not included. Avg. Ship. Wt. 12 oz.

ESTES®
A DAMON COMPANY

Photo Courtesy of NASA

SKILL LEVEL 2

Recommended for individuals with some model building experience.

SCORPION

SKILL LEVEL 2 High flying two-stage sport model with research vehicle styling. Easy-to-build and exciting to fly with all plastic fin units. Booster employs tumble recovery while upper stage streaks skyward to altitudes over 1,000 feet. Length: 26.5″ Dia. 0.976″ Wt. 1.8 oz.

ENGINES: Single Stage: A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.
Upper Stage: A8-5 (1st Flt.), B4-6, B6-6, C6-7.
Booster Stage: A8-0 (1st Flt.), B6-0, C6-0.

No. 1333
$8.49

DEFENDER

SKILL LEVEL 2 "D" Powered high-performance sport flier capable of flights over 1,200 feet. Length: 25″ Dia. 1.325″ Wt. 1.8 oz.

ENGINE: D12-5 (1st Flt.).

No. 1924
$5.49

BLUE BIRD ZERO

SKILL LEVEL 2 Experimental sounding design over 3 feet tall. Easy-to-assemble. Delivers high performance flights and gentle recoveries with big 18″ recovery 'chute. Length: 39.75″ Dia. 1.325″ Wt. 2.7 oz.

ENGINES: B4-2, B4-4, B6-2, B6-4 (1st Flt.), B8-5, C6-5, C6-7.

No. 1335
$9.49

CHALLENGER - II

SKILL LEVEL 2 High performance "D" engine powered sport model. Easy-to-assemble and fly in less than one hour. No painting required with black plastic fin-unit, yellow nose cone, and pre-colored white body tube. Recommended high altitude launch vehicle for the Astro Cam 110 Aerial Camera (see page 29). Take fantastic aerial photos from over 1,200 feet. (Astro Cam 110 Camera not included.) Length: 24.25″ Dia. 1.34″ Wt. 3.0 oz.

ENGINES: D11-9, D12-7 (1st Flt.)

No. 1330
$9.95

Engines, launch system, glue, and finishing supplies not included. Avg. Ship. Wt. 12 oz.

SKILL LEVEL 3

Recommended for the experienced model builder.

SR-71 BLACKBIRD

The first SR-71 aircraft were delivered to Strategic Air Command in 1965 for reconnaissance work. Built almost entirely of titanium (as strong as, but lighter than steel), Blackbird weighs about 140,000 lbs., has a wingspan of 55 ft., and is 107 ft. long. Able to achieve speeds of more than 2,000 mph and altitudes of more than 80,000 ft., the craft carries a crew of two with a range of 2,000 or more miles. SR-71 is painted black or dark blue to reduce the heat from high-speed friction.

SKILL LEVEL 3 Our nation's super high-altitude reconnaissance plane flies at ultra-sound speeds. So high-tech nearly all information about this plane is classified. The Estes scale model features the same state-of-the-art appearance. Over 1½ feet long SR-71 Blackbird flies to 900 foot altitudes and lands via 12″ parachute. Length: 19″ Dia. 0.976″ Wt. 3.2 oz.
ENGINES: B4-2(1st Flt.), B6-2, B6-4, B8-5, C6-5
No. 1942
$10.95

STEALTH

SKILL LEVEL 3 Radar invisible fighter from the future closes in on its opponents from seemingly nowhere. Outfitted with laser weaponry it seeks and destroys in ultimate silence. Our model can reach altitudes up to 900 feet. Length: 16.25″ Dia. 1.125″ Wt. 2.3 oz.
ENGINES: A8-3, B4-4 (1st Flt.), B6-4, C5-3, C6-3, C6-5.
No. 1929
$6.95

PHOENIX

SKILL LEVEL 3 Big semi-scale model of the famous Phoenix air-to-air supersonic missile. Impressive in the air and on display. Single "D" powered engine provides a slow, realistic lift-off and flights over 600 feet. Length: 30″ Dia. 2.60″ Wt. 6.6 oz.
ENGINE: D12-3 (1st Flt.)
No. 1380
$13.95

Engines, launch system, glue, and finishing supplies not included. Avg. Ship. Wt. 12 oz.

NEW

SR-71 BLACKBIRD

Photo Courtesy Lockheed - California Company

STEALTH

PHOENIX

SKILL LEVEL 3

SKILL LEVEL 3

Recommended for the experienced model builder.

X-16

SKILL LEVEL 3 Far in the future the Air Force may be flying this experimental model into Earth's outer atmosphere to test hyper velocity near space travel. Our version can fly to 1,000 feet. Length: 17.25″ Dia. 0.976″ Wt. 1.45 oz.

ENGINES: A8-3 (1st Flt.), B4-4, B6-2 B6-4, B8-5, C6-5.

No. 1933
$5.95

STARHAWK

SKILL LEVEL 3 Light-years from here, eons from now, Starhawk keeps peace in another galaxy. Our model achieves flights of 1000 feet and gently descends with a 12″ parachute. Length: 19.35″ Dia. 0.976″ Wt. 1.05 oz.

ENGINES: A8-3(1st Flt.), B4-4, B6-4, B8-5, C6-5, C6-7

No. 1946
$5.49

APACHE - 2

SKILL LEVEL 3 Ultra-high performance two-stager with unique kit decal. Streamer for reliable high-altitude recovery. Capable of flights over 2500 feet. Length: 18.25″ Dia. 0.976″ Wt. 1.34 oz.

ENGINES: Single Stage: 1/2A6-2, A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.
Upper Stage: A8-5 (1st Flt.), B4-6, B6-6, C6-7.
Booster: A8-0 (1st Flt.), B6-0, C6-0.

No. 1388
$6.49

MANTA BOMBER

SKILL LEVEL 3 Fighter and mainstay of the Ray Galaxy fleet is heavily armed and driven by twin circulating vectron engines. Estes' model will fly to 1,000 feet. Length: 14.75″ Dia. 0.976″ Wt. 1.76 oz.

ENGINES: A8-3 (1st Flt.), B4-4, B6-4, C5-3, C6-3.

No. 1928
$6.95

Engines, launch system, glue and finishing supplies not included. Avg. Ship. Wt. 12 oz.

SKILL LEVEL 3
Recommended for the experienced model builder.

DELTA WEDGE
SKILL LEVEL 3 Exotic fighter capable of ultra-light speed passes through time-windows to evade or strike the enemy. Our model of this fighter can attain altitudes over 1,000 feet. Length: 16.5″ Dia. 0.736″ Wt. 1.52 oz.
ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.
No. 1931
$4.95

MARTE MK 2
SKILL LEVEL 3 Our semi-scale model of the Italian air-to-ship missile will fly to 1000 feet with a single "C" engine and carry a payload, too! Length: 18.25″ Dia. 0.736″ Wt. 1.4 oz.
ENGINES: A8-3(1st Flt.), B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7
No. 1940
$6.95

HERCULES
SKILL LEVEL 3 Clear payload section highlights this two-stager. Sleek design that can be flown as a single or two-stage model. Flights over 2,500 feet! Length: 21.6″ Dia. 0.976″ Wt. 1.84 oz.
ENGINES: Single Stage: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.
Upper Stage: A8-5 (1st Flt.), B6-6, B8-5, C6-7.
Booster: A8-0(1st Flt.), B6-0, C6-0.
No. 1377
$7.95

STARSHIP EXCALIBUR
SKILL LEVEL 3 Immense starship armed with laser weaponry and defense shields voyages far into deep space on peaceful missions. Our version of this starship can fly to 1,000 feet. Length: 15.5″ Dia. 0.976″ Wt. 1.89 oz.
ENGINES: A8-3 (1st Flt.), B4-4, B6-4, C6-5.
No. 1920
$6.49

Engines, launch system, glue and finishing supplies not included. Avg. Ship. Wt. 12 oz.

SKILL LEVEL 3

Recommended for the experienced model builder.

AIRBORNE SURVEILLANCE MISSILE

SKILL LEVEL 3 Unique scale-like appearance and a challenge to build. Length: 11.4″ Dia. 0.976″ Wt. 0.71 oz.
ENGINES: A3-4T (1st Flt.), A10-3T.
No. 0867
$3.95

EXOCET

SKILL LEVEL 3 Nearly two feet tall, this semi-scale model of the French anti-ship missile produced by the Societe Nationale Industrielle Aerospatiale is an excellent sport flier capable of altitudes up to 900 feet. It's also an excellent display model. Length: 21.375″ Dia. 1.325″ Wt. 1.69 oz.
ENGINES: A8-3, B4-6 (1st Flt.), B6-6, B8-5, C6-5, C6-7.
No. 1925
$6.95

D-REGION TOMAHAWK

SKILL LEVEL 3 Our version of NASA's sounding rocket, Flight No. 12.08 G.T., is an excellent choice for your first scale model. Almost 3 feet tall, Tomahawk features large, easy-to-assemble parts and realistic flights to 800 feet. Recovery is via huge 18″ parachute. A 3/16″ Maxi-Rod recommended for launch. Length: 35.5″ Dia. 1.637″ Wt. 3.7 oz.
ENGINES: D12-5(1st Flt.), D12-7
No. 1944
$9.95

SCORPIUS

SKILL LEVEL 3 Futuristic cruise ship for deep space exploration powered by two ion induction electrification engines. An incredible display model. Length: 15.25″ Dia. 0.976″ Wt. 1.59 oz.
ENGINES: 1/2A6-2, A8-3, B4-4 (1st Flt.), B6-4, B8-5, C6-5.
No. 1375
$6.49

Engines, launch system, glue and finishing supplies not included. Avg. Ship. Wt. 12 oz.

Photo Courtesy Societe Nationale Industrielle Aerospatiale (Product of France)

SKILL LEVEL 3

Recommended for the experienced model builder.

COMANCHE - 3

SKILL LEVEL 3 Big three-stager with mighty "D" powered booster. Can be flown in single, two-stage or three-stage configurations. Incredible flights over 2,600 feet. Length: 41" Dia. 0.976" Wt. 2.08 oz.

ENGINES: Single Stage: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.
Upper Stage: A8-5 (1st Flt.), B4-6, B6-6, C6-7.
Second Stage: A8-0 (1st Flt.), B6-0, C6-0.
Booster: D12-0 (1st Flt.).

No. 1382
$7.95

NEBULON WARRIOR

SKILL LEVEL 3 Historic intergalactic warship model is high-lighted by unique vertical wing design and ominous decor. Flight altitudes of 800 feet are possible. Length: 16.5" Dia. 0.736" Wt. 1.3 oz.

ENGINES: A8-3, B4-4(1st Flt.), B6-4, B8-5, C6-5

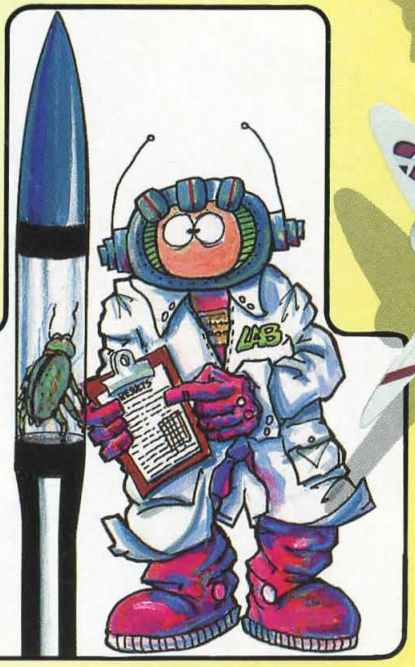
No. 1939
$6.49

SCISSOR-WING TRANSPORT

SKILL LEVEL 3 This exciting bird introduces the revolutionary new Scissor-Wing concept. Features super SST styling and high flight reliability. Capable of glide times of more than 60 seconds. Internal ejection power pod features vertical stabilizer fins. Comes ready-to-assemble with die-cut parts and two-color decals. Length: 22.75" Body Dia. 0.976" Wing Span 16" Wt. w/pod 2.5 oz. w/out pod 1.8 oz.

ENGINES: B4-2 (1st Flt.), B6-2, C5-3, C6-3.

No. 1265
$12.95



TECH-TIP #6 PAYLOADS

Some model rockets have a special section used to carry cargo. This cargo or "payload" can be a camera, such as AstroCam 110, to take aerial photos of your launch site, or an insect, so you can study the effects of acceleration on a living organism. For competition, try launching a raw egg and retrieving it-UNBROKEN! Please do not launch mice, gerbils and other rodents as the tremendous acceleration and g forces of model rocket flight could be very frightening and harmful to them.

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship. Wt. 12 oz.

SKILL LEVEL 4

Recommended for the advanced model builder.

V-2

SKILL LEVEL 4 Large semi-scale version of the World War II ballistic missile. The original German version stood 46 feet high, weighed over 14 tons and could travel as much as 200 miles at nearly 2,000 mph. 3/16″ Maxi-Rod required for launch. Length: 22.4″ Dia. 2.60″ Wt. 4.9 oz.

ENGINES: D12-3 (1st Flt.), D12-5.

No. 1926
$10.95

SOARING EAGLE

SKILL LEVEL 4 Estes' first flex-wing glider. Goes up like a rocket, pod ejects and wings unfold. Glide times up to 2 minutes. Length: 23.6″ Dia. 0.976″ Wt. 2.42 oz.

ENGINES: B4-2 (1st Flt.), B6-2, B8-5, C5-3, C6-3.

No. 1373
$9.49

BOEING A.L.C.M.

CRUISE MISSILE

SKILL LEVEL 4 Designed to be launched from a large aircraft like the Lockheed C5-A Galaxy or the B-52 Bomber, the Cruise Missile can deliver a nuclear warhead with pin-point accuracy to its target. The Estes near-scale version of this vehicle is a challenging model with blow-molded plastic body, die-cut plastic fins and wings, and injection molded plastic parts. Also included is a 4-color decal sheet, 12″ 'chute, and wings that swing out for display. Length: 12.3″ Wing Span 7.75″ Wt. 2.79 oz.

ENGINES: A8-3, B4-4 (1st Flt.), B6-4, B8-5, C6-5.

No. 1336
$13.95

TECH-TIP #7

MODEL ROCKET COMPETITION AND CONTESTS

Contests are fun. See whose rocket flies the highest or stays in the air the longest. Find out who has the best looking model or whose scale model is most precise. Who can cause their rocket to land via parachute where they want it to land?

These contests are fun and educational. Compete with your friends or classmates. If you wish to compete in local, national or international events or set a national or world record, you should join the National Association of Rocketry, 182 Madison Drive, Elizabeth, PA 15037. Your membership includes many benefits such as discounts, insurance, and a monthly subscription to American Spacemodeling Magazine.

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship. Wt. 12 oz.

SKILL LEVEL 4
Recommended for the advanced model builder.

SPACE SHUTTLE

On a standard mission, the Orbiter will remain in orbit for 7 days, return to the Earth, land like an airplane, and be readied for another flight in 14 days. It can deploy and retrieve satellites and can place deep-space vehicles in their initial low-Earth orbit.

The Space Shuttle is comprised of the following three main units:

- Two solid rocket boosters (SRB's) which have a sea level thrust of 2,600,000 pounds each.
- The orbiter which is 121′ long with a wing span of 79′, weighs about 150,000 pounds without fuel. It has a payload bay 60′ long and 15′ in diameter. Payload capacity is 65,000 pounds.
- The external tank (ET) is 154′ long and 28.6′ in diameter. At lift-off the tank contains 1,550,000 pounds of liquid hydrogen and oxygen. These are in separate compartments of the tank and are fed to the orbiter's three main rocket engines which have a thrust of 470,000 pounds each. The tank is not reusable.

Maximum altitude of the Space Shuttle is 600 miles.

SKILL LEVEL 4 Dramatic 1/162nd scale reproduction of America's newest space vehicle. Designed as a reusable near space transportation system with satellite deployment and retrieval capability. Delivers really spectacular flights. Semi-scale orbiter employs glide recovery just like the real thing while boosters and external tank return via 18″ parachute recovery. Our model features special stabilizer fins for atmospheric flight which remove easily for display. Kit components include injection molded, vacu-formed plastic and die-cut parts. Incredible display model with authentic NASA decor. Shuttle Length: 13.6″ Dia. 2.04″ Orbiter Length: 9.0″ Orbiter Wingspan 7.1″ Wt. 4.37 oz. ENGINES: C5-3 (1st Flt.), C6-3.

No. 1284
$17.95

ORBITAL TRANSPORT

SKILL LEVEL 4 Only a gleam in the eye of NASA, but it's flying for Estes rocketeers right now! Astonishingly realistic recovery system where mothership returns to Earth via huge 18″ parachute and interplanetary orbiter glides home. Long and sleek, developed for both orbital and near-space missions. Transport vehicle and glider fly piggy-backed and separate at apogee for spectacular dual recovery. Transport Ship Length: 23″ Dia. 0.976″ Wing Span 7.9″ Wt. 2 oz. Re-Entry Vehicle Length: 8.6″ Dia. 0.736″ Wing Span 5″ Wt. 0.5 oz.

ENGINES: B4-2, B4-4, B6-2, B6-4 (1st Flt.), B8-5, C6-5.

No. 1242

$11.49

Photo and STS DATA Courtesy of NASA

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship. Wt. 12 oz.

SKILL LEVEL 5
Recommended for the expert model builder.

MERCURY REDSTONE

Between 1953 and 1958 Redstone had proven to be a reliable flight vehicle. Therefore, it was selected as the vehicle to carry the first American into sub-orbital flight. On May 5, 1961, Redstone lifted the Mercury capsule "Freedom 7" with Alan Shepard, Jr. inside to an altitude of 116.5 statute miles and traveled 302.8 miles down-range. The flight lasted 15 minutes and 22 seconds. Mercury-Redstone stood 83 feet tall, weighed (with fuel) 66,000 lbs. and delivered 78,000 lbs. of thrust.

SKILL LEVEL 5 Historical 1/35 scale model of the Mercury sub-orbital rocket used to launch Alan Shepard into space flight May 5, 1961. Authentic detailing includes large decal and injection molded Mercury capsule and tower. Rocket and capsule each return to Earth via 12" chute recovery. Length: 28.75" Dia. 2.04" Wt. 3.0 oz.
ENGINE: C5-3 (1st Flt.).

No. 1921
$12.95

SATURN V MOON ROCKET

First successful flight of the Saturn V was November 9, 1967. Able to place 280,000 pounds in Earth orbit, the Saturn V inserted Apollo II into a lunar trajectory which resulted in the first manned lunar landing in July, 1969. Later Sky Lab was also placed in orbit by the Saturn V launch vehicle. Fully-loaded with fuel Saturn V weighs more than 6,000,000 lbs. and with the Apollo capsule in place stands 363 feet tall. Saturn's three stages produce 8,700,000 lbs. of thrust.

SKILL LEVEL 5 A truly magnificent scale reproduction of the world's most famous rocket...the mighty Saturn V. First space vehicle to carry men to the moon and most recently utilized to place Skylab in orbit around Earth. Scaled to 1/100th of its actual size, our model stands an impressive 43-1/2" tall. Single "D" engine power gives this baby a spectacular Cape Canaveral style lift-off. Apollo capsule has life-like recovery with bright 12" orange and white 'chute. Precision molded plastic engine nozzles and Apollo capsule with escape tower give detailed authenticity. Corrugated body wrap-ons make this one of our most precise scale models. Also includes Tech Report on clustering. Length: 43.5"Dia. 3.938" Wt. 9.9 oz.
ENGINES: May be flown as a 3 engine cluster or single engine. Cluster Power: C5-3 or C6-3 (3 required). "D" Power: D12-3 (1 required).

No. 1236
$47.95

Photo Courtesy NASA

Engines, launch system, glue and finishing supplies not included.
Avg. Ship. Wt. 24 oz.

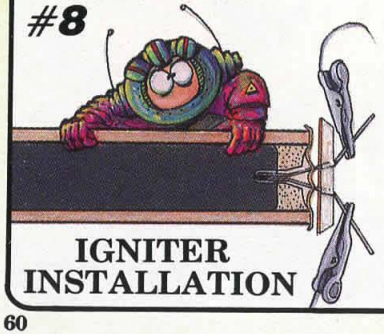
SOLAR IGNITERS:
Add increased reliability at lift-off with Estes Solar Igniters. Features easy engine installation and is suitable for all Estes launch control systems. Unique four element design makes it the most dependable igniter made. (Six per pkg.) Ship Wt. 1 oz.
No. 2301
$1.49

ASTRON IGNITERS:
Easy to use for reliable ignition every time. Recommended only for launch systems using 6 or 12 volt car batteries or 12 volt lantern batteries. (Patent No. 3,363,559). (Six per pkg.) Ship Wt. 1 oz.
No. 2225
$1.49

RECOVERY WADDING:
Provides protection from hot ejection gases for parachutes and streamers. Each package contains approximately 75 4½" squares—enough wadding for up to 25 flights. Instructions for installation are included in each package. Ship Wt. 6 oz.
No. 2274
$1.49

BLAST-OFF FLIGHT PAK
Ideal engine assortment. Features 24 of the most popular Estes model rocket engines, plus Solar Igniters and Parachute Recovery Wadding. Priced at an excellent savings. Includes six each 1/2A6-2, A8-3, B6-4, and C6-5 high performance model rocket engines, one pkg. parachute Recovery Wadding, and 30 Solar Igniters. Ship Wt. 1 lb. 8 oz.
No. 1672
$17.95

TECH-TIP #8



IGNITER INSTALLATION

Separate igniters by cutting the tape but do not remove it. Place the igniter deep inside the engine so it is touching the propellant. Use masking tape to firmly secure the igniter in place. The igniter must be touching the propellant when the electricity heats the igniter to cause ignition. Attach clean micro-clips as close to the igniter's center as possible. To avoid a short-circuit the micro-clips and igniter leads must not touch one another or any other metal. If igniter burns in two without igniting the engine, disarm controller, wait one minute and replace the igniter.

REGULAR ENGINE SELECTION CHART

Prod. No.	Engine Type	Prices 3 for	Total Impulse lb-sec ①	Total Impulse n-sec ②	Time Delay (±15%)	Max. Lift Wt.	Max. Thrust	Thrust Duration	Initial Weight Oz.	Initial Weight G.	Propellant Weight Oz.	Propellant Weight G.
SINGLE STAGE ENGINES GREEN LABEL												
1593	1/2A6-2	$2.85	0.28	1.25	2 sec.	2.5 oz.	46 oz.	0.20 sec.	0.53	15.0	0.055	1.56
1598	A8-3	$3.00	0.56	2.50	3 sec.	4.0 oz.	48 oz.	0.32 sec.	0.57	16.2	0.110	3.12
1601	B4-2	$3.00	1.12	5.00	2 sec.	4.0 oz.	48 oz.	1.20 sec.	0.70	19.8	0.294	8.33
1602	B4-4	$3.00	1.12	5.00	4 sec.	3.5 oz.	48 oz.	1.20 sec.	0.74	21.0	0.294	8.33
1605	B6-2	$3.00	1.12	5.00	2 sec.	4.5 oz.	48 oz.	0.83 sec.	0.68	19.3	0.220	6.24
1606	B6-4	$3.00	1.12	5.00	4 sec.	4.0 oz.	48 oz.	0.83 sec.	0.71	20.1	0.220	6.24
1620	B8-5*	$3.15	1.12	5.00	5 sec.	5.0 oz.	5 lb.	0.60 sec.	0.68	19.3	0.220	6.24
1617	C5-3	$3.25	2.25	10.00	3 sec.	8.0 oz.	5 lb.	2.10 sec.	0.90	25.5	0.450	12.70
1613	C6-3	$3.25	2.25	10.00	3 sec.	4.0 oz.	48 oz.	1.70 sec.	0.88	24.9	0.440	12.48
1614	C6-5	$3.25	2.25	10.00	5 sec.	4.0 oz.	48 oz.	1.70 sec.	0.91	25.8	0.440	12.48
UPPER STAGE ENGINES or single stage engine if used in a very light rocket PURPLE OR BLUE LABEL												
1599	A8-5	$3.00	0.56	2.50	5 sec.	2.0 oz.	48 oz.	0.32 sec.	0.62	17.6	0.110	3.12
1604	B4-6	$3.00	1.12	5.00	6 sec.	1.5 oz.	48 oz.	1.20 sec.	0.78	22.1	0.294	8.33
1607	B6-6	$3.00	1.12	5.00	6 sec.	2.0 oz.	48 oz.	0.83 sec.	0.78	22.1	0.220	6.24
1615	C6-7	$3.25	2.25	10.00	7 sec.	2.5 oz.	48 oz.	1.70 sec.	0.95	26.9	0.440	12.48
BOOSTER ENGINES RED LABEL												
1600	A8-0	$3.00	0.56	2.50	none	4.0 oz.	48 oz.	0.30 sec.	0.51	14.2	0.110	3.12
1608	B6-0	$3.00	1.12	5.00	none	4.0 oz.	48 oz.	0.80 sec.	0.58	16.4	0.220	6.24
1616	C6-0	$3.00	2.25	10.00	none	4.0 oz.	48 oz.	1.68 sec.	0.80	22.7	0.440	12.48

Regular engines are 2.75 in. long and 0.690 in. dia. Ship Wt. of each package of engines is approximately 4 oz.

*Series II engines have semi-core-burning grain with large propellant burning area for high initial thrust with short thrust duration.

MIGHTY 'D' ENGINE SELECTION CHART

Prod. No.	Engine Type	Prices 4 for	Total Impulse lb-sec ①	Total Impulse n-sec ②	Time Delay (±15%)	Max. Lift Wt.	Max. Thrust	Thrust Duration	Initial Weight Oz.	Initial Weight G.	Propellant Weight Oz.	Propellant Weight G.
SINGLE STAGE ENGINES GREEN LABEL												
1666	D12-3	$4.95	4.48	20.0	3 sec.	14 oz.	9 lb.	1.70 sec.	1.49	42.2	0.879	24.93
1667	D12-5	$4.95	4.48	20.0	5 sec.	10 oz.	9 lb.	1.70 sec.	1.52	43.1	0.879	24.93
UPPER STAGE ENGINES or single stage engine if used in a very light rocket PURPLE OR BLUE LABEL												
1668	D12-7	$4.95	4.48	20.0	7 sec.	8 oz.	9 lb.	1.70 sec.	1.55	44.0	0.879	24.93
1669	D11-9	$4.95	3.37	15.0	9 sec.	8 oz.	6.3 lb.	1.40 sec.	1.51	42.9	0.65	18.50
BOOSTER ENGINES RED LABEL												
1665	D12-0	$4.95	4.48	20.0	none	14 oz.	9 lb.	1.70 sec.	1.44	40.9	0.879	24.93

"D" engines are 2.75 in. long and 0.945 in. dia. Ship Wt. of each package of "D" engines is approximately 6½ oz.

MINI ENGINE SELECTION CHART

Prod. No.	Engine Type	Prices 4 for	Total Impulse lb-sec ①	Total Impulse n-sec ②	Time Delay (±15%)	Max. Lift Wt.	Max. Thrust	Thrust Duration	Initial Weight Oz.	Initial Weight G.	Propellant Weight Oz.	Propellant Weight G.
SINGLE STAGE ENGINES GREEN LABEL												
1503	1/2A3-2T	$3.00	0.28	1.25	2 sec.	2 oz.	28 oz.	0.36 sec.	0.198	5.6	0.062	1.75
1507	A3-4T	$3.15	0.56	2.50	4 sec.	2 oz.	28 oz.	0.86 sec.	0.268	7.6	0.124	3.50
1511	A10-3T	$3.15	0.56	2.50	3 sec.	5 oz.	48 oz.	0.26 sec.	0.277	7.9	0.133	3.78
UPPER STAGE ENGINES or single stage engine if used in a very light rocket PURPLE OR BLUE LABEL												
1504	1/2A3-4T	$3.00	0.28	1.25	4 sec.	1 oz.	28 oz.	0.36 sec.	0.212	6.0	0.062	1.75
BOOSTER ENGINES RED LABEL												
1510	A10-0T	$3.15	0.56	2.50	none	5 oz.	48 oz.	0.26 sec.	0.235	6.7	0.133	3.70

Mini-Engines are 1.75 in. long a .500 in. dia. Ship Wt. of each package of mini-engines is approximately 2½ oz.

Complete instructions and Solar Rocket Igniters are included with each package of Estes model rocket engines.

① Pound-seconds (Figures shown are optimum.)
② Newton-seconds*(Figures shown are optimum.)

*A Newton is the measurement of force required to move one kilogram of mass one meter per second. Avg. thrust in Newtons x thrust duration = Newton-seconds. Newton-seconds ÷ by 4.45 = Pound-seconds.

POLAROID® POLAPULSE™ P-100 BATTERY

Revolutionary new, super thin, high performance, 6 volt battery. Measures only 3.7″ high by 3″ wide by 0.18″ thick, yet packs the power for more than 150 launchings. Use with Power-Pulse Launch Controller (No. 2210) and Solar Igniters (No. 2301) Ship Wt. 4 oz.

No. 2211 **$4.49**

POWER-PULSE™ LAUNCH CONTROLLER

Slim line, launch controller uses 6 volt, Polaroid® Polapulse™ P-100 battery. Delivers consistent ignition performance for more than 150 launchings.

Made of rugged plastic, the Power-Pulse launch controller features safety key, arming light, and launch button, plus 15 feet of launch cable and pre-soldered micro-clips. Very easy-to-assemble. Battery can be removed instantly for use in other electronic devices. Use with Estes Solar Igniters (#2301). (Battery Not Included.) Length: 4⅞″ Width: 3⅞″ Depth: 15/16″ to 1 13/16″ Ship Wt.: 12 oz.

No. 2210 **$11.49**

SOLAR LAUNCH CONTROLLER

The Solar Launch Controller should be standard equipment in your range box. Launch control unit requires only 4 alkaline AA batteries for power. Advanced shape allows for perfect hand-held control. Unit is easily assembled and features safety key, continuity check lamp, ignition button and 15 feet of lightweight launch cable. System is constructed of durable plastic. Micro-clips are presoldered. Use with Estes Solar Igniters (#230l). (Batteries not included.) Length: 6.1″ Ht. 2.4″ Width 1.44″ Wt. (with batteries) 7 oz. Ship Wt. 8 oz.

No. 2300 **$12.95**

ASTRON LAUNCH CONTROLLER

Heavy-duty Launch Controller features futuristic design and provides greater reliability with simplified assembly. Recommended for 6 or 12 volt power sources. No need to remove battery from car, simply connect launch system's battery clips to terminals. Features include arming lamp, safety key, launch button, battery clips, micro-clips, and 18 feet of launch cable. Ship Wt. 12 oz.

No. 2212 **$10.95**

PORTA-PAD LAUNCH PAD

Designed for stability, the Porta-Pad is rugged enough to take the stress of countless launchings, yet is lightweight and compact enough for easy carrying and storage. Accommodates standard 1/8″ rod (#2243) or heavy-duty 3/16″ Maxi-Rod (#2244). Tilt adjustment allows you to compensate for wind direction. Ship Wt. 1 lb. 8 oz.

No. 2217 **$10.95**

The Power-Pulse™ Launch Controller (#2210), the Solar Launch Controller (#2300) or the Astron Launch Controller (#2212) are the recommended launch controllers for use with the Porta-Pad (#2217).

POLAROID® POLAPULSE™ P-100 BATTERY

SOLAR LAUNCH CONTROLLER

LAUNCH SYSTEMS

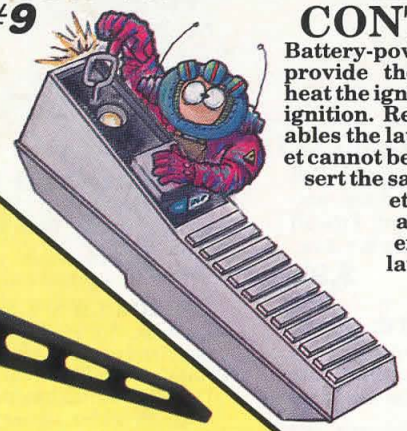
POWER-PULSE™ LAUNCH CONTROLLER

ASTRON LAUNCH CONTROLLER

PORTA-PAD LAUNCH PAD

TECH TIP #9

LAUNCH CONTROLLERS



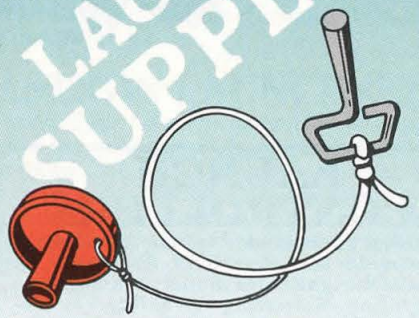
Battery-powered launch controllers provide the electricity necessary to heat the igniter for model rocket engine ignition. Removing the safety key disables the launch controller so the rocket cannot be launched accidentally. Insert the safety key only after the rocket is prepped, the micro-clips attached to the igniter in the engine, everyone has left the launch pad area, and you are ready for countdown. The continuity or arming light should glow after the safety key is inserted. Countdown. .5-4-3-2-1-0 . .press and hold the launch button depressed until the rocket lifts off.

LAUNCH SYSTEMS

BIG FOOT
LAUNCH CONTROL SYSTEM

Big Foot Launch control system is capable of launching all your Estes models. Launch platform features rugged plastic construction and maximum launch pad stability. Includes blast deflector plate, 1/8″ x 36″ two-piece launch rod, adjustable swivel mount to compensate for wind direction and is adaptable to either 1/8″ or 3/16″ launch rods. Legs remove easily for storage. This launch control unit is engineered for simple, quick assembly and features safety key, continuity check light, ignition button and 15 feet of launch cable. (Uses 4 alkaline type "D" cell batteries and Estes Solar Igniters #2301-Not Included). Ship Wt. 2 lbs.
No.2208 **$25.95**

LAUNCH SUPPLIES



LAUNCH ROD SAFETY CAP with UNIVERSAL SAFETY KEY: For Launch Pad Safety! Includes plastic launch rod cap, universal safety key, and elastic cord. Fits all Estes launch control systems. Ship Wt. 4 oz.
No. 2205 **$.95**

BLAST DEFLECTOR PLATE: Slip-on metal deflector plate fits any launcher using 1/8″ or 3/16″ rods. Protects launcher base from rocket blast. Four-inch diameter. Ship Wt. 5 oz.
No. 2241 **$1.95**

3/16″ DIA. MAXI-ROD: Perfect for launching giant models. Fits Porta-Pad Tripod (#2217) and Big Foot Launch Pad (#2208). Two-piece construction 36″ long, lightweight aluminum launch rod. Collapsible for easy storage. Includes Safety Cap & Key. Ship Wt. 12 oz.
No. 2244 **$3.95**

1/8″ DIA. TWO PIECE LAUNCH ROD: Handy collapsible two-piece rod for portable launchers. Pieces slip together to make a 36″ long rod. Base rod has a diameter of 1/8″. Includes Safety Cap & Key. Ship Wt. 6 oz.
No. 2243 **$2.95**

ADD-ON ROD: Sturdy 1/8″ diameter, 18″ long launch rod section expands two-piece rod to 54″ length. Ship Wt. 6 oz.
No. 2236 **$1.05**

BATTERY CLIPS: Hook-up to car batteries. Heavy-duty clips connect to terminals up to 1″ in dia. With insulators. (2 per pkg.) Ship Wt. 5 oz.
No. 2245 **$1.75**

MICRO-CLIPS: Equip your launcher with the best. Spring-loaded solid steel clips connect lead wires to igniters. Easy-to-clean and highly conductive with flat contact surfaces. Only 1.1 inches long. Attach to leads with or without solder. (2 per pkg.) Ship Wt. 1 oz.
No. 2247 **$.95**

ACCESSORIES

ALTI TRAK™
ALTITUDE FINDER Skill Level 1

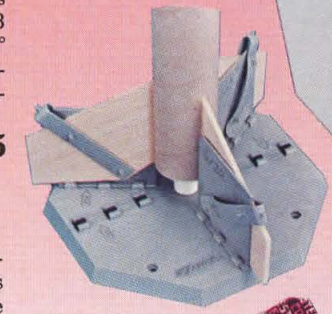
Track your rocket to the top of its flight and instantly lock-in its altitude on the "new" AltiTrak altitude finder. Displays exact model rocket altitude on metric scale—no guessing! (Conversion table included for feet.) A precision instrument made of durable plastic. Easy-to-assemble and looks like futuristic laser pistol. How high did it go? Now you'll know!
Ship Wt. 15 oz.
No. 2232 **$8.95**

PHANTOM Skill Level 1

Educational, See-Thru Rocket with Recovery System, 10″ Parachute, Engine Mount, and Cut-Away Engine! Perfect static demonstration model for workshops and presentations. Shows all internal components of a model rocket plus special cut-away version of C6-5 model rocket engine. Ideal for displays and exhibits. Length: 12.6″ Dia. 0.976″ Wt. 1.35 oz. Ship. Wt. 3 oz.
No. 1207 **$4.95**

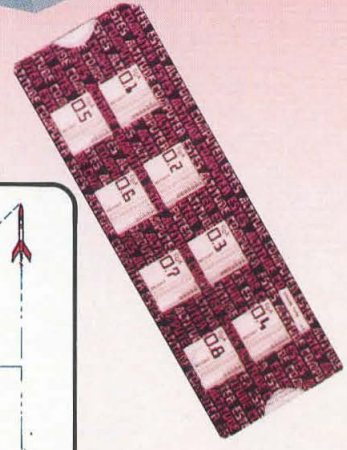
FIN ALIGNMENT GUIDE

Position and glue fins quickly and easily. Fits body tubes up to BT-101. Designed for either 3 or 4 finned rockets, aligning fins at 90° or 120° to each other. Easily assembled with slip-together plastic parts. Adjusts quickly with plastic fin position clips. Ship. Wt. 3 lbs.
No. 2231 **$10.95**



PREDICTED ALTITUDE COMPUTER

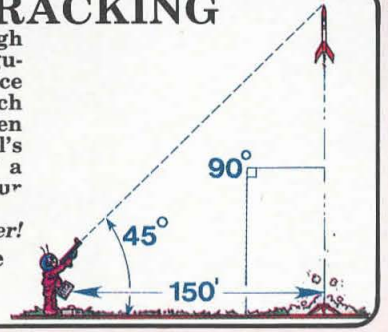
The Estes Pocket Size Altitude computer enables any rocketeer to predict his model rocket's altitude in a matter of seconds. Just move the center slide in a simple procedure for fast, accurate results. Three color calculator comes complete with instructions. Ship. Wt. 3 oz.
No. 9015 **$2.65**



TECH-TIP #10
ALTITUDE TRACKING

One way of figuring how high your rocket flies is by triangulation. Measure the distance between tracker and launch pad and the angle between horizontal and your model's peak altitude. Then using a table of tangents figure your rocket's altitude. *Estes' AltiTrak makes it even easier!*

Ex. Tangent of 45° angle is 1.0 x 100′ distance = 100′ altitude.



DESIGNER'S SPECIAL

Ideal parts assortment for the creative rocketeer. Develop your own R & D program. Over 75 pieces at an excellent savings! Ship Wt. 2 lbs.

Body Tubes
2 BT-5
2 BT-20
2 BT-50
1 BT-55
1 BT-60

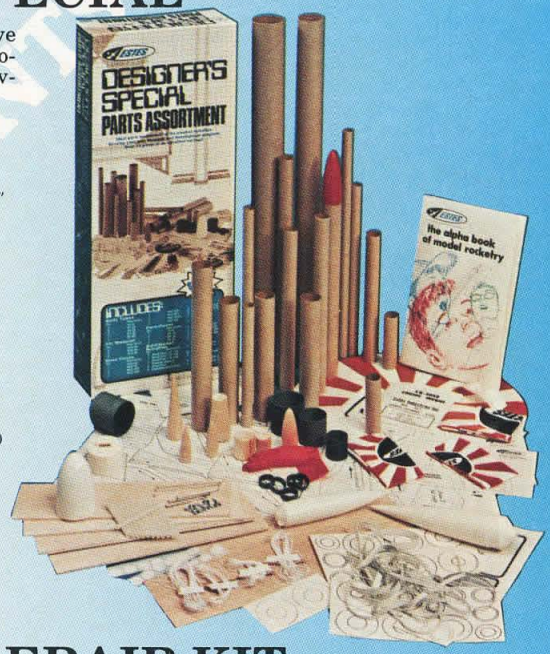
Nose Cones
1 BNC-5E
1 BNC-5S
1 BNC-20B
1 BNC-20R
1 PNC-50KA
1 PNC-50Y
1 PNC-55AC
1 PNC-60L

Fin Material
2 BFS-20
2 BFS-30
2 BFS-40

Parachutes
1 PK-10
2 PK-12
1 PK-18
1 PK-24

Recovery Equipment
3 Shock Cord 1/8" x 18"
1 Shock Cord 1/8" x 36"
1 Shock Cord 1/4" x 36"
1 Streamer Material 1" x 30"
6 Screw Eyes

Miscellaneous
3 Engine Blocks (EB-20A)
3 Engine Holders (EH-3)
3 Engine Holders (EH-2)
1 Engine Mount (EH-2050)
1 Engine Mount (EH-2060)
1 Nose Block (NB-20)
1 Nose Block (NB-50)
1 Stage Coupler (JT-55C)
1 Stage Coupler (JT-60C)
1 Balsa Adapter (TA-2050A)
1 Multi-Purpose Paper Adapter Set (TA-1)
12 Launch Lugs (2-3/8" long)
1 Alpha Book of Model Rocketry
1 Fin Pattern Sheet No. 2
1 Fin Pattern Sheet No. 3



No. 1463 **$23.95**

EMERGENCY REPAIR KIT

A must for every range box. Features many essential materials for "on-the-spot" repair of your model rockets. Ship Wt. 8 oz.

Sandpaper
Screw Eyes
White Glue Packet
Launch Rod Safety Cap
Universal Safety Key
Recloseable Pouch
Recovery Wadding
12" Parachute
1/8" and 1/4" Shock Cords
144" Shroud Line
Tape Discs
Launch Lugs
Shock Cord Mounts

No. 2233 **$2.95**

FUTURISTIC PARTS ASSORTMENT

Create your own interplanetary voyagers and space fighters with this selection of science-fiction-style parts. Over 50 parts! Includes special exotic fin patterns and design idea sheet. Ship Wt. 2 lbs.

Body Tubes
1 BT-5
1 BT-20
2 BT-50
2 BT-55

Nose Cones
1 PNC -50KA
1 PNC-50F
1 PNC-50SP
1 PNC -50
1 PNC-55B

Fin Material
2 BFS-20
2 BFS-30
1 BFS-40

Parachute
1 PK-10
2 PK-12
1 PK-18
1 PK-24

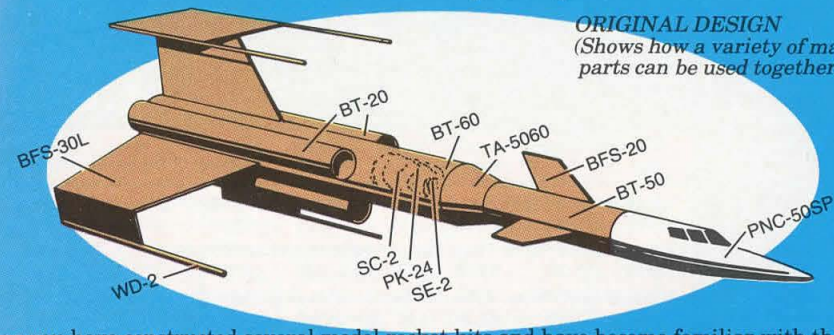
Recovery Equipment
3 Shock Cord 1/8" x 18"
1 Shock Cord 1/4" x 36"
1 Streamer Material 1" x 30"

Miscellaneous
1 Nose Block (NB-20)
1 Nose Block (NB-50)
1 Multi-Purpose Adapter Set (TA-1)
1 Fin Pattern Sheet
1 Exotic Fin Pattern Sheet
1 Design Idea Sheet
1 Mini Alpha Book of Model Rocketry
3 Engine Blocks (EB-20A)
1 Stage Coupler (JT-50C)
1 Stage Coupler (JT-55C)
3 Engine Holders (EH-2)
12 Launch Lugs (LL-2B)
2 Engine Mounts (EH-2050)

No. 1465 **$27.95**

Build Your Own Design

With Estes Quality Model Rocket Parts



ORIGINAL DESIGN
(Shows how a variety of matching parts can be used together.)

Once you have constructed several model rocket kits and have become familiar with the basic Estes Technical Reports you will no doubt have a variety of ideas for unique designs of your own. In order to select the proper parts for your original design it is important for you to understand our system of parts description numbers.

Nearly all matching Estes parts have the same series description number. Those which do not feature an additional explanation as to where they can be used. Normally, parts listing the same series description number will be interchangeable with each other. For instance, a #20 body tube (BT-20) would mate with a #20A balsa nose cone (BNC-20A), a #20C payload section (PS-20C), or a #20B engine block (EB-20B). Further, a #2060 tube adapter (TA-2060) will adapt a BT-20 to a BT-60, and a #5055 centering ring (AR-5055) will center a BT-50 within a BT-55. By using balsa or paper adapters almost any combination of parts can be joined together. For ordering, be sure to use both the product number and the series description number (name).

WIN $75.00 IN FREE MERCHANDISE!

ENTER THE DESIGN OF THE MONTH CONTEST

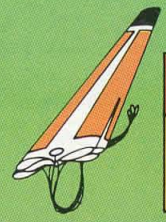
Have an idea for an original design? Enter our Design of the Month Competition today. Your design could be published in an issue of Model Rocket News Magazine. Simply follow the rules below.

1. All entries become the property of Estes Industries and cannot be returned.
2. Employees of Estes Industries and members of their immediate families are not eligible.
3. Any type of model rocketry design can be entered (rockets, boost-gliders, launching or recovery devices, etc.).
4. Designs should be new, original, and different, but they also need to be workable. The goal is to develop something new that other rocketeers can build and use successfully, too.
5. Entries will be judged on practicality, originality, neatness, completeness, and clarity. All plans must be flight tested and proven.
6. Your design entry should include a parts list and any instructions or diagrams you feel would be helpful.
7. Please do not send the actual model as it cannot be returned.
8. Photos of entries are greatly appreciated, but are not required.
9. You may send as many entries as you like.
10. New contest every month.
11. All designs reaching Estes Industries during the calendar month will be entered in that month's competition. (Date of receipt, not postmark, will determine the month in which a design will be entered.)
12. If two or more exceptional entries are received during any month, the judges may, at their discretion, make identical first-place awards or give additional honorable mentions.
13. Designs should be sent to the Design of the Month, c/o MRNM Editor, Estes Industries, Inc. Penrose, CO 81240. However, all plans sent to us which are not specifically addressed to another contest or department will be automatically placed in the Design of the Month Competition.
14. Each month the designer of the winning entry will receive a certificate entitling them to $75.00 in merchandise and an award certificate suitable for framing. Award winners will be notified by mail.

GOOD LUCK!!!

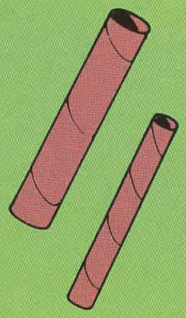
PARACHUTE KITS:

Get the best in parachute recovery! Two-color printed plastic 'chutes give maximum visibility with easy track design. Light-weight, durable and easily folded. These 'chutes are very thin, allowing the most material to be packed into the least body space. Each kit comes complete with 'chute material, tape discs, and shroud lines. Each weighs less than.3 oz. Ship Wt. 2 oz.



Prod. No.	Description	Parachute Diameter	Price Each
2262	PK-10	10 inches	$1.49
2264	PK-12	12 inches	$1.49
2267	PK-18	18 inches	$1.95
2271	PK-24	24 inches	$1.95

BODY TUBES



Prod. No.	Description	Price Each	Length	Inside Diameter	Outside Diameter	Wall Thickness	Weight in Oz. Net.	Ship.
Spiral-Wound Paper Tube, for nose sections and strap-on payloads.								
30302	BT-5	$1.55	18"	0.515"	0.541"	0.013"	.219	11
Spiral-Wound Paper Tube, for competition and sport models.								
30316	BT-20	$1.75	18"	0.710"	0.736"	0.013"	.288	11
Spiral-Wound Paper Tube, for sport and high performance payload models.								
30352	BT-50	$1.75	18"	0.950"	0.976"	0.013"	.378	11
Spiral-Wound Paper Tube, for sport and demonstration models.								
30382	BT-55	$2.05	18"	1.283"	1.325"	0.021"	.672	11
Spiral-Wound Paper Tube, for sport and demonstration models.								
30396	BT-60	$2.15	18"	1.595"	1.637"	0.021"	.960	11
Spiral-Wound Paper Tube, for monster models and tail rings.								
30424	BT-70	$2.70	17.5"	2.175"	2.217"	0.021"	1.300	14
30433	BT-80KD	$2.50	14.2"	2.560"	2.600"	0.021"	.637	11
Spiral-Wound Paper Tube, for giant-scale models.								
30438	BT-101	$3.60	16.5"	3.896"	3.938"	0.021"	1.974	16

ENGINE BLOCKS

Prod. No.	Description	Price 3 for	Outside Dia.	Inside Dia.	Length	Fits	Weight in Oz. Net.	Ship.
3131	EB-20A	$1.40	.708"	.65"	1/4"	BT-20	.009	1

BALSA ADAPTERS

Adapters give flexibility for rocket design. Switch from one size body tube to another for payload capsules, parachute compartments, propulsion sections, etc. Any adapter can be hollowed to make a passage for ejection gases. All adapters have at least 1/2" mating surface on each end.

Prod. No.	Description	Price Each	Mates Tubes	Length	Taper Length	Weight in Oz. Net.	Ship.
70002	TA-520	$1.65	BT-5 to BT-20	1.75"	0.75"	0.04	1
70004	TA-550	$1.75	BT-5 to BT-50	2.2"	1.0"	0.06	4
70006	TA-2050	$1.55	BT-20 to BT-50	3.0"	2.0"	0.15	4
70010	TA-2055	$1.90	BT-20 to BT-55	2.5"	1.5"	0.22	4
70012	TA-2060	$2.70	BT-20 to BT-60	3.0"	2.0"	0.20	4
70014	TA-5055	$2.70	BT-50 to BT-55	2.0"	1.0"	0.60	4
70016	TA-5060	$3.20	BT-50 to BT-60	3.0"	2.0"	0.23	4
70028	TA-5560	$3.30	BT-55 to BT-60	2.2"	1.0"	0.25	4
70034	TA-6070	$3.05	BT-60 to BT-70	2.7"	1.5"	0.65	4

STAGE COUPLERS

For multi-staging, joining body tubes, positioning adapter tubes, etc. Make perfect guides for cutting body tubes and sanding cut edges of body tubes, too. Ship Wt. for all is 3 oz. each.

Prod. No.	Description	Price Each	Outside Diameter	Inside Diameter	Length	Fits	Average Weight
30252	JT-5C	$1.05	0.513"	0.455"	3/4"	BT-5	.020 oz.
30254	JT-20C	$1.05	0.708"	0.650"	3/4"	BT-20	.027 oz.
30260	JT-50C	$1.05	0.949"	0.920"	1"	BT-50	.051 oz.
30262	JT-55C	$1.05	1.28"	1.25"	1.3"	BT-55	.088 oz.
30266	JT-60C	$1.05	1.59"	1.55"	1-1/2"	BT-60	.124 oz.
30270	JT-70A	$1.55	2.175"	2.115"	1-1/4"	BT-70	.140 oz.

NOSE BLOCKS

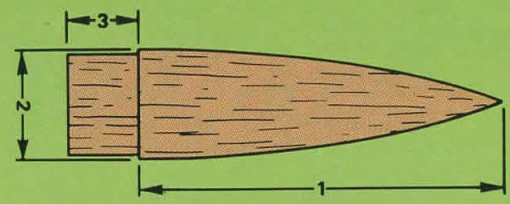
Use these top quality featherweight balsa nose blocks in payload sections and anywhere else a solid bulkhead is required. Precision turned for exact fit in body tubes.

Prod. No.	Description	Price Each	Outside Diameter	Length	Fits	Weight in Oz. Net	Ship.
70152	NB-20	$1.20	0.710"	3 4"	BT-20	.014	1
70158	NB-50	$1.40	0.950"	1"	BT-50	.040	4
70162	NB-55	$1.40	1.283"	1-1 4"	BT-55	.115	4
70164	NB-60	$1.55	1.595"	1-1 2"	BT-60	.190	4

NOSE CONES

Nose cone dimensions listed in columns 1,2, and 3.

In "Description" column BNC stands for balsa nose cone and PNC for plastic nose cone.



Shape	No.	Prod. No.	Description	Price Each	Dimensions 1	2	3	Average Weight	Ship. Wt.
1 2 3 4	1	70216	BNC-5V	$1.55	3/4"	0.541"	1/4"	0.013 oz.	1 oz.
	2	70212	BNC-5E	$1.55	1-3/8"	0.541"	1/4"	0.020 oz.	1 oz.
	3	70214	BNC-5S	$1.55	1-1/2"	0.541"	1/4"	0.016 oz.	1 oz.
	4	70218	BNC-5W	$1.75	2-7/8"	0.541"	1/4"	0.039 oz.	2 oz.
5 6 7 8	5	70230	BNC-20B	$1.65	1-11/16"	0.736"	5/16"	0.05 oz.	1 oz.
	6	70240	BNC-20R	$1.75	2-3/4"	0.736"	3/8"	0.07 oz.	2 oz.
	7	71032	PNC-20N	$1.90	2-3/4"	0.736"	1/2"	0.08 oz.	2 oz.
	8	70241	BNC-20Y	$1.60	1"	0.736"	3/8"	0.02 oz.	1 oz.
9 10 11 12 13	9	71000	PNC-50	$2.30	3-7/8"	0.976"	5/8"	0.59 oz.	4 oz.
	10	70256	BNC-50J	$1.75	1-3/8"	0.976"	1/2"	0.08 oz.	4 oz.
	11	70262	BNC-50K	$1.95	2-3/4"	0.976"	1/2"	0.13 oz.	4 oz.
	11	71028	PNC-50KA	$1.65	2-3/4"	0.976"	1/2"	0.13 oz.	4 oz.
	12	71001	PNC-50SP	$2.30	5-11/16"	0.976"	1/2"	0.25 oz.	6 oz.
	13	70266	BNC-50Y	$2.30	4-3/8"	0.976"	3/8"	0.16 oz.	6 oz.
	13	71009	PNC-50Y	$2.10	4-3/8"	0.976"	3/8"	0.16 oz.	6 oz.
14 15 16	14	71070	PNC-55AC	$2.70	5-3/8"	1.325"	3/8"	0.32 oz.	6 oz.
	15	71075	PNC-55AO	$2.75	4-3/8"	1.325"	3/4"	0.43 oz.	4 oz.
	16	71038	PNC-55D	$2.70	3-3/4"	1.325"	3/4"	0.36 oz.	4 oz.
17 18	17	71020	PNC-60MS	$2.35	3-1/8"	1.637"	5/8"	0.39 oz.	4 oz.
	18	71043	PNC-60AH	$3.40	6-5/8"	1.637"	7/8"	1.0 oz.	6 oz.
19	19	70300	BNC-70AJ	$3.75	4-1/4"	2.217"	1"	0.85 oz.	6 oz.
20	20	71035	PNC -80K	$3.55	8-1/8"	2.555"	1-5/8"	1.68 oz.	8 oz.

ENGINE MOUNTS

Use Estes high performance engine mounts for your original designs. All engine mounts feature easy-to-assemble instructions and light-weight components.

Engine Type	Prod. No.	Description	Price	Fits	Net Weight Oz.	Ship. Wt. Oz.
For Regular Engines—A, B, & C type 0.69" x 2.75"	3150	EH-2050	$1.70	BT-50	0.1	5
	3151	EH-2055	$1.70	BT-55	0.14	5
	3152	EH-2060	$1.70	BT-60	0.17	5
For "D" type Engines 0.945" x 2.75"	3155	EM-5063	$2.05	Saturn V	0.4	5
For "T" Mini-Engines ,5" x 1.75"	3153	EM-520	$1.65	BT-20	0.09	5
Special Purpose Quick-Change Conversion Mount—From "D" Engines to Regular Engines	3154	EM-2050	$1.75	BT-50	0.19	5

ESTES
A DAMON COMPANY

MODEL ROCKET PARTS

AR-5055 CENTERING RINGS: For centering a BT-50 body tube within a BT-55. Extra strong for "D" engine mounts. Weight 0.062 oz. ea. (4 per pkg.) Ship Wt. 2 oz.
No. 3102 **$1.65**

AR-2050 CENTERING RINGS: For centering a BT-20 body tube within a BT-50. Greater strength makes for use with high thrust engines. Weight per pair 0.285 oz. (10 per pkg.) Ship Wt. 2 oz.
No. 3100 **$2.00**

LAUNCH LUGS: Super-strength laminated launch lugs feature mylar plastic core for durability, paper outer layer for easy gluing. Inside diameter 5/32" fit 1/8" launch rod. Ship Wt. 1 oz.

1¼" long (12 per pkg.)
No. 2321 **$1.70**

2⅜" long (10 per pkg.)
2322 **$1.90**

MULTI-PURPOSE SET: Includes a total of 20 rings for positioning BT-5 in BT-20; BT-5, BT-20, BT-30 in BT-50; and BT-5, BT-20 and BT-50 in BT-60. Also three universal tapered shrouds and instructions. Ship Wt. 2 oz.
No. 8030 **$1.75**

ENGINE HOLDER: Flat spring steel design gives easy installation and low drag. Recommended for sport and demonstration models. (3 per pkg.) Ship Wt. 1. Oz.
For Regular and "D" engines.
No. 3140 **$2.00**
For Mini-Engines
No. 3142 **$1.70**

RA-2050 RINGS: 20 rings for centering and mounting BT-20 in BT-50. (20 per pkg.) Ship Wt. 2 oz.
3110 **$1.55**

RA-2055 RINGS: 10 rings for centering and mounting BT-20 in BT-55. (10 per pkg.) Ship Wt 2. oz.
No. 3111 **$1.60**

RA-2060 RINGS: 10 rings for centering and mounting BT-20 in BT-60. (10 per pkg.) Ship Wt. 2 oz.
3113 **$1.65**

MAXI-ROD LAUNCH LUG: 2" long, fits 3/16" diameter launch rod. (4 per pkg.)
No. 2328 **$1.55**

DOWELS: Extra-strong lightweight seasoned maple dowels. (8 per pkg.) Ship Wt. 5 oz.

1/8" x 18"
No. 32056 **$1.40**

1/12" x 12"
No. 32058 **$1.40**

FIN STOCK

Top quality balsa sheeting for making fins for model rockets. For maximum strength, grain of wood should follow the leading edge of fin.

Prod. No.	Description	Price 3 for	Dimensions (In Inches)	Weight in Oz. Net.	Ship.	Major Use
32102	BFS-20	$1.60	1/16x3x9	.130	4	High Performance
32106	BFS-20L	$1.85	1/16x3x12	.173	6	High Performance
32108	BFS-30	$1.65	3/32x3x9	.150	4	Sport Models
32110	BFS-30L	$1.90	3/32x3x12	.200	6	Sport Models
32116	BFS-40	$1.70	1/8x3x9	.200	4	Cluster Rockets
32118	BFS-40L	$1.90	1/8x3x12	.265	6	Glider Wings

TAPE DISCS: Fasten shroud lines to plastic parachutes or streamers with these 3/4" dia. pressure sensitive Tape Discs. In sheets of 6 discs. (4 sheets per pkg.) Ship Wt. 1 oz.
No. 2294 **$1.55**

STREAMER MATERIAL: Bright orange, flame-resistant crepe paper streamers. In 7½ foot lengths, enough for two to eight streamers. Specify size when ordering. Ship. Wt. 1 oz.
1" wide: Net Wt. 0.092 oz.
No. 2341 **$2.65**
2" wide: Net Wt. 0.184 oz.
No. 2343 **$2.90**

SCREW EYES: Specify size when ordering. (6 per pkg.) Ship Wt. 1 oz.
LARGE EYE:
1" long: 0.04 oz.
No. 2280 **$1.45**
SMALL EYE:
3/4" long: 0.03 oz.
No. 2279 **$1.35**
EXTRA SMALL EYE:
5/8" long: 0.01 oz.
No. 2281 **$1.15**

SHOCK CORD: Specify width when ordering. Ship. Wt. 1 oz. 1/8" wide: Net Wt. 0.039 oz.
No. 2276 **$.90**
1/4" wide: Net Wt. 0.078 oz.
No. 2277 **$1.00**

Also 36" long for greater stretch on those larger birds. 1/8" wide: Net Wt. 0.078 oz.
No. 85744 **$1.05**

SHROUD LINES: Build reliable, durable, custom parachutes with this strong, hard surface shroud line cord. Comes in 70 yard spools. Ship. Wt. 5 oz.
No. 2340 **$1.55**

TAPE STRIPS: For top strength, low bulk and low weight, fasten shroud lines with these 1/4" x 3/4" tape strips, in sheets of 12 strips. (6 sheets per pkg.) Ship. Wt. 1 oz.
No. 38412 **$1.75**

SNAP SWIVELS: For quick changes and reduced tangling in your recovery systems, use these tiny 1" long snap swivels. Net Wt. 0.01 oz. (12 per pkg.) Ship Wt. 1 oz.
No. 2292 **$2.00**

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RECOVERY
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A DAMON COMPANY

ESTES INDUSTRIES Penrose, CO 81240 USA

PN 2864

IMPORTANT INFORMATION PLEASE READ!

ATTENTION PARENTS, TEACHERS, AND ROCKETEERS

Please do not be alarmed by the placement of the label illustrated below on shipping cartons containing model rocket engines. When used as directed, Model Rocket Engines "ARE SAFE", and have produced an excellent Safety Record. This label is technically required by law. Please note that "Flammable Solid" label is required only for the transportation of the product and that model rocket engines are considered less of a hazard than model airplane fuel or aerosol paints.

DON'T MISS A MAILING

In order for you to receive all Estes mailings be sure to order at least $5.00 worth of merchandise every 6 months. This will assure that your name will be retained on our active mailing list.

SHIPPING INFORMATION

The following information is provided in accordance with the requirements set forth in Trade Regulation Rule 435, promulgated by the Federal Trade Commission, effective February 2, 1976.

We normally ship within 72 hours of receipt of your order. On occasion, a product may be temporarily out of stock, in which case we will notify you within 30 days that there will be a delay. Your order will then be filled as soon as possible, but in no event later than 90 days from receipt of your order.

A SPECIAL MESSAGE TO ESTES CUSTOMERS

From time to time Estes Industries makes the names and addresses of its customers available to other companies who produce other products you may be interested in. This means that you may be receiving advertising and sales literature from these companies in your mail. If you do not wish your name and address to be used in this manner, please contact Estes Industries, Customer Service Department, Penrose, Colorado 81240.

ATTENTION CALIFORNIA RESIDENTS

To receive model rocket engines by mail order in California, you must be aware of the following conditions and fulfill several simple requirements.

1. To receive 1/4A through C type engines you must be at least 14 years of age and have a "Statement of Age Certificate" on file with Estes Industries.
2. To receive D engines you must be at least 18 years of age and have a "Statement of Age Certificate" on file with Estes Industries.
3. If you are not old enough to receive the type of model rocket engines you wish, please have one of your parents send your order in for you. Remember they must also have a "Statement of Age Certificate" on file with Estes Industries.
4. You need to file a "Statement of Age Certificate" only once. Fill out and send in the certificate below now to assure the rapid handling of all your future orders.
5. To launch, an individual must secure authorization (either written or verbal) from the fire authority having jurisdiction over the area he plans to use as a launch site.
6. No additional consumer permit to purchase or use model rocket engines is required.

Copies of the State of California Model Regulations may be obtained upon request by writing either of the following:

Estes Industries
Customer Services Department
Penrose, Colorado 81240

or

Chief Albert E. Hole
California State Fire Marshal
7171 Bowling Dr., Suite 600
Sacramento, California 95823

CALIFORNIA STATEMENT OF AGE CERTIFICATE

Name_____ **Date**_____

Address_____ **City**_____

State_____ **Phone (** **)**_____

In order to receive model rocket engines in California, please check one of the following boxes and sign:

☐ **(A) I am 14 years of age, but not yet 18.**
☐ **(B) I am 18 years of age or older.**

NOTE: Certificate need be filed only once.

Rocketeer Signature _____

Parent Signature _____
(Must be signed if box "A" is checked)

Send to: Estes Industries
Order Processing Dept.
Penrose, Colorado 81240
or include with your next order.

E

ATTENTION MASSACHUSETTS AND RHODE ISLAND RESIDENTS

According to your state model rocketry regulations, you are required to obtain a permit from your local fire or safety authority in order to purchase and use model rocket engines.

As soon as you receive your permit, please send us a copy to keep on permanent file. All orders for engines must be placed in the name of the permit holder. For a copy of Massachusetts regulations write for: Reg. 527 CMR 16.00, Secretary of State, Michael J. Connolly, State Bookstore, State House, Room 116, Boston, MA 02133. (Include $1.05 for copy and postage. Checks should be made payable to the Commonwealth of Massachusetts.) In Rhode Island, write: Rhode Island State Fire Marshal, 12 Humbert Street, North Providence, Rhode Island 02911 c/o William McVey, Chief of Technical Services.

ATTENTION NEW JERSEY RESIDENTS

In accordance with Safety Regulation No. 24 of the New Jersey Department of Labor and Industry, Estes Industries can sell engines only to holders of valid permits. These permits are issued to any adult who will assume full responsibility for the safe handling and use of model rocket engines, including the purchase of them.

To obtain a permit first write to the State of New Jersey, Department of Labor and Industry, Bureau of Engineering and Safety, Box 709, Trenton, New Jersey 08625, and request an application form for a model rocket engine permit. The fee for a permit is two dollars. DO NOT SEND THE PAYMENT until you return the completed application form to the Department of Labor and Industry. You will receive more complete information on the procedures to follow when you receive the application form.

As soon as you receive your permit, please send us a copy to keep on permanent file.

If you are not yet an adult yourself, your parents, teachers, etc. can obtain permits and can purchase engines for you.

ATTENTION CANADIAN RESIDENTS

Please send all orders for Estes products to: L&M Distributors, 10505 106th Street, Edmonton, Alberta, P5H 2X5. As prices are different in Canada you should request a Canadian Price List and Catalog from L&M Distributors.

ATTENTION FOREIGN ORDERS

Due to restrictive International Air Mail Regulations, we are not able to ship our model rocket engines to any international or APO address.

DEAR MODEL ROCKETEER,

Please remember that modelers such as yourself must obey the laws and regulations of your city, county, and state if model rocketry is to advance and current restrictions are to eventually be lifted. Only thru maintaining an excellent safety record can this take place. We feel we have the safest, most complete educational model rocketry program available. However, occasionally antiquated fireworks laws and misinformed individuals interpret model rocketry as requiring strict regulations, which it does not need or deserve.

We at Estes Industries promise to continue our efforts to inform the misinformed and to separate model rocketry from the misconception that it should be treated like fireworks, which it is not. Your compliancce with existing laws will assist us in pushing model rocketry ahead for less restriction in the future. Also, remember that experimenting with home-made propellants is far too dangerous to attempt.

Sincerely, ESTES INDUSTRIES

National Association of Rocketry

NAR MEMBERS RECEIVE ALL THIS:

- American Spacemodeling magazine—12 issues of the exciting monthly magazine crammed with the latest in rocketry!
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- NAR Sporting License—Impressive ID card identifying you as an official NAR member, with your own registered number!
- NAR Window Decal—Official member decal proudly lets everyone know you are a member.

DON'T MISS OUT ON THE FUN!!

Membership Application Next Page

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National Association Of Rocketry

•Membership Application

MAIL TO:
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182 MADISON DRIVE, ELIZABETH, PA 15037

This flier is provided courtesy of your model rocket manufacturer. Application with Dept. E-85, membership fee, and all information requests should be sent directly to the NAR.

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- ☐ RENEWING MEMBERS DEDUCT $1.00 FROM MEMBERSHIP PRICE.

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☐ Please send more information

I pledge to obey the NAR/HIAA Safety Code.

Signature_____

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G

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EFFECTIVE 12-1 83

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Address_____ "STICK ADDRESS LABEL HERE"

City_____

State_____ Zip Code_____

Phone ( ) _____ Birth Date__/__/__
mo. day yr

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ADDRESS_____

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VISA Card No. ☐☐☐☐-☐☐☐-☐☐☐-☐☐☐

Master Charge Card No. ☐☐☐☐-☐☐☐☐-☐☐☐☐-☐☐☐☐

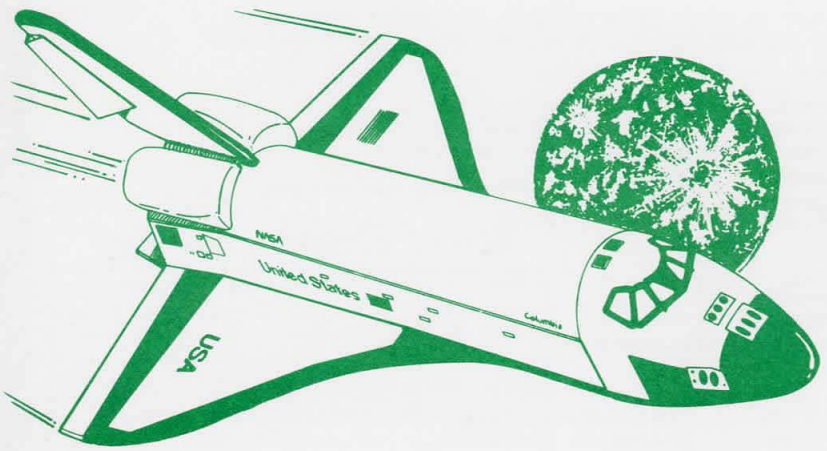
Expiration Date_____

Card Holder's Signature_____
(As it appears on card.)

ESTES INDUSTRIES, PENROSE, COLO. 81240 *($10.00 Minimum Order For Credit Card Orders.)*

Be Sure To Enclose Special Offer Coupons

Place Stamp Here



ESTES INDUSTRIES
"Model Rocket Capitol of the World"
PENROSE, CO. 81240 USA

HOW TO ORDER — FOLLOW THESE EASY STEPS FOR BEST SERVICE

IMPORTANT

Estes model rocketry products are recommended for ages 10 to adult. Adult supervision is suggested for those under 12 years of age when flying model rockets.

This order form replaces all previous order forms. Please be sure that you use the correct and full catalog number for each item when you order. All prices are subject to change without notice. WHEN SENDING ORDER BE SURE TO GIVE ZIP CODE IN YOUR ADDRESS.

POSTAGE

Estes Industries ships all retail orders POST-PAID in the U.S. by regular land mail or UPS.

PAYMENT ON ORDER

Full payment must accompany all orders. Please send all remittances by either check or money order, both for your protection and our convenience. If you do send currency, be sure your envelope has sufficient postage, is properly sealed, and is addressed correctly to assure delivery. Coins should be attached to a separate sheet of paper, not to the order blank. Use a single strip of masking tape to hold the coins in place. Avoid the mailing of coins, as they are easily lost in the mail. We cannot assume responsibility for the loss of coins, currency, or orders in the mail. Remember to include sufficient funds with your order. For your protection, we do not ship orders C.O.D. Proper attention to these details will result in speedier service for you.

Your order may, for various reasons, have to be shipped in more than one package. If all of your order does not come at the same time, please be patient and give the balance of the order time to arrive.

NOTE: All foreign orders require additional postage. Please write for more information on postage and mailing restrictions.

PRIORITY MAIL (Air Mail) SERVICE

While Estes Industries specializes in fast service, sometimes extra speed is necessary. The Post Office offers a service called Priority Mail which gives packages and parcels the fastest handling and transportation possible. PRIORITY MAIL CANNOT INCLUDE MODEL ROCKET ENGINES, AS ORDERS CONTAINING ENGINES CAN ONLY BE SHIPPED BY PARCEL POST OR UPS AT THIS TIME.

For other items on which you desire extra rapid delivery, additional postage may be included for Priority Mail. Shipping weights are given on all items. Total up the shipping weights on the items you are ordering, then find the amount to allow for extra postage on the chart below. When your order is processed you will be charged only for the difference between regular parcel post and priority mail - any excess will be refunded.

WEIGHT (UP TO BUT NOT OVER) Allow →		10 oz. to 1 lb.	2 lbs.	3 lbs.	4 lbs.
		$ .80	$1.13	$1.51	$1.93
5 lbs.	6 lbs.	7 lbs.	8 lbs.	9 lbs.	10 lbs.
$2.48	$3.13	$3.73	$4.33	$4.93	$5.53

For orders 9 ounces or less, send 9¢ per ounce.

"Estes is an equal opportunity employer."

903028D

ESTES A DAMON COMPANY

FULL ONE YEAR WARRANTY

Your Estes product is warranted against defects in materials or workmanship for one year from the date of the original purchase. Any Estes product which, because of a manufacturing mistake, malfunctions or proves to be defective within the one-year warranty period will be repaired or replaced, at Estes' option and at no charge to you, provided it is returned to Estes with proof of purchase.

This warranty does not cover incidental or consequential damage including injury or damage to persons or property caused by the use, abuse, misuse, failure to comply with operating instructions or improper storage of the warranted product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

For repair or replacement under this warranty, please return the defective part of your Estes product with proof of purchase to: Estes Industries, Customer Service Department, Penrose, Colorado 81240.

TEAR HERE AND INSERT IN ENVELOPE

Thank you for ordering

TEAR HERE AND INSERT IN ENVELOPE

FOLD HERE AND SEAL

HAVE YOU ORDERED EVERYTHING YOU NEED? IS YOUR MONEY ORDER OR CHECK ENCLOSED? DID YOU CHECK YOUR MAILING ADDRESS AND ZIP? DID YOU FILL IN ALL CREDIT CARD INFORMATION?

—HELP US TO SERVE YOU BETTER—

Your comments will assist us in providing you with better service and even more exciting products.

1. What types of scale models would you like Estes to produce?

2. Do you prefer ☐ Large ☐ Small size models?
3. Do you think Estes kits are generally ☐ Easy, ☐ Average or ☐ Difficult to assemble considering their recommended skill level?
4. Are Estes kit instructions easy to follow? ☐ Yes ☐ No
5. Would you prefer more plastic parts for simpler assembly and better detail? ☐ Yes ☐ No
6. What Skill Level of kits do you prefer to build?
   ☐1 ☐2 ☐3 ☐4 ☐5
7. What three types of model rockets are your favorites?
   ☐ Single Stage ☐ Scale Model ☐ Boost Glider
   ☐ Sport Flier ☐ Futuristic Design ☐ Maxi-Brute
   ☐ Mini-Brute ☐ Multi-Stager
   ☐ "D" Powered ☐ Payload
8. How did you become interested in model rocketry?
   ☐ A friend ☐ Film ☐ Gift
   ☐ School ☐ Magazine ad ☐ Hobby shop
   ☐ Rocket club ☐ Saw a launch ☐ Department store
   ☐ Article ☐ Comic book
   ☐ TV
   ☐ Other
9. What is your favorite type of scale model?
   ☐ Military Scale ☐ NASA Scale ☐ Sounding Scale
10. What product other than model rockets would you like to see Estes produce:
    ☐ Electric RC Cars ☐ Kits ☐ Pre-Assembled
    ☐ Powered Boats ☐ Kits ☐ Pre-Assembled
    ☐ RC Airplanes ☐ Kits ☐ Pre-Assembled
    ☐ U-Control Airplanes ☐ Kits ☐ Pre-Assembled
    ☐ Solar Kits ☐ Construction Sets
    ☐ Slot Racing ☐ HO Scale ☐ 1/32nd Scale
    ☐ Other
11. Age_____ Grade_____
12. ☐ Male ☐ Female

—THANK YOU FOR YOUR ASSISTANCE—

Send a Friend a Catalog!

☐ Please rush a "New" ESTES Model Rocketry Catalog to:
Friend's Name _____
STREET _____
CITY _____
STATE_____ ZIP_____ Dept. 50N

☐ Please rush a "New" ESTES Model Rocketry Catalog to:
Friend's Name _____
STREET _____
CITY _____
STATE_____ ZIP_____ Dept. 50N